LIZARDS AND TURTLES OF WESTERN CHIHUAHUA

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ABSTRACT.—This second report on the reptiles of Chihuahua deals with the lizards and turtles of western Chihuahua. Field work was done from 1956 to 1972 and was confined to the area west of Highway 45. General information pertaining to the ecology and geology reported in the section on snakes is not repeated. Ecological and life history information is included in the species accounts where data are available.

In western Chihuahua 16 genera and 49 species and subspecies of lizards and 3 genera and 5 species of turtles are reported. Only one subspecies is described as new (*Sceloporus poinsettii robisoni*), and added data strengthen the diagnosis of others. Three genera (*Sceloporus*, *Cnemidophorus*, and *Eumeces*) contain 28 of the species and subspecies reported.

This is the second article of three on the herpetofauna of the Mexican state of Chihuahua. Article one presented data on the snakes, as well as general information; these will not be repeated. The present report deals with the lizards, a major segment of the reptilian fauna of this state, and briefly with the turtles collected during the various trips. While we at no time concentrated on finding representatives of the order Testudines, we did include them in the collection when found. Therefore, only the scientific name and locality is included in this report.

Perhaps the most complete listing of the lizard and turtle species to date is Smith and Taylor (1950). In their report, 14 genera, 32 species, and 5 additional subspecies of lizards are listed, as are 3 genera and 4 species of turtles. As with the serpents, numerous reports have included lizards and turtles from Chihuahua, but none have been designed to examine as a unit the species occurring in this Mexican state.

Field work was done along Highway 45 from Ciudad Juárez south to the Durango border. No attempt was made to collect east of the highway. Our efforts were, therefore, in areas west of Highway 45, including eight trips into the mountains west of Colonia Juárez and west and southwest of Chihuahua City. We did not enter the Sierra del Nido, an area being investigated by Dr. J. D. Anderson. Collecting was done from May into October 1956–1972. This schedule of trips permitted us to be in Chihuahua during the dry season, May and June, the wet season, from July into early September, and after the heavy summer rains in late September and October. It should be noted that Chihuahua does not have a predictable wet season. Some years the summer rains are spotty, the dry season extending well into July. When the rains do come, there is a major transformation of the entire area. What was apparently a dry, barren hillside soon becomes a green, grassy meadow between the desert shrubs. In the fall, fields of grass, knee- to hip-high, soon develop in the open areas (Fig. 1).

The altitudinal changes, from about 5,000 feet in the desert valleys east of the mountains to the mountains ranging from 7,500 to 9,000 feet, provide a variety of habitats extending west to the Continental Divide. The more gradual ascent from the east is in great contrast to the more sudden descent into the deep canyons and escarpments of the west, particularly in the tributaries of the Río El Fuerte of the southwest. This altitudinal change influences the flora, ranging from desert shrubs in the valleys to the extensive oak and pine forests in the mountains. For the lizards, as was true for the snakes (Tanner 1986), the western highlands have provided for species whose range is restricted to mountains and whose distribution is basically south into Durango rather than north.

During the years (1956–1972) spent in Chihuahua, the habitats (desert valleys, foothills, and western mountains) were being used but not badly abused. Open areas near towns and

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Fig. 1. Views of the area between Casas Grandes and Colonia Juárez: A and B, hills covered with grasses and low-growing shrubs. Photos taken 1 May 1986.

cities were overgrazed, especially during the dry seasons. Bands of apparently unused burros roamed unattended (with the increase of motorized equipment, the burro population has recently been reduced). In the mountains many areas seemed to be pristine except for the removal of large tracts of timber. Except for a few areas of population centered around the mining and timber industries, there were large areas with few inhabitants. Abandoned

Fig. 1 continued: C, hills covered with grasses and low-growing shrubs; D, view looking southwest across the orchards in the Tinaja Valley and the Sierra Madre Occidental in the distance. Photos taken 1 May 1986.

mines left families stranded and struggling for an existence. In the immediate vicinity surrounding these areas, few suitable collecting sites were found. Thus, our collecting areas were usually removed from the vicinity of towns or cities.

I have been advised that some mountain and streamside areas have in recent years been turned into fields of marijuana and poppies. How safe an American might be collect-

Fig. 2. Mr. and Mrs. Herman Hatch at their home in Colonia Juárez, 30 April 1986.

ing in these areas now is questionable. Nevertheless, our days in the mountains were safe and enjoyable, and at no time did we have any difficulties.

SPECIES ACCOUNTS

The following list includes species collected during our field work, specimens received on loan from other museums, and also literature citations which appear to be valid. Only those references are cited which provide the first descriptions and those considered to be of major importance thereafter. In listing the Testudines, only the localities are indicated to provide the basic distribution for the few widely separated specimens collected. Questionable specimens were identified by Dr. J. E. Iverson. The entire collection has been seen by Dr. J. M. Legler. References dealing more specifically with the kinosternids of Chihuahua are in Conant (1974), Conant and Berry (1978), and Iverson (1981).

Family Kinosternidae

Genus *Kinosternon*

Kinosternon flavescens flavescens Hartweg

Platythyra flavescens Agassiz, 1857a, Contributions to the natural history of the United States 1:430 and 2:01, 5 figs.

Kinosternon flavescens flavescens: Hartweg, 1938, Occ. Papers Mus. Zool. Univ. of Michigan 371:1–5; Iverson, 1979, Copeia (2):212–225.

Approximately 2 mi S of Las Palomas (at a big spring), 1 (BYU 14650).

80 mi S Ciudad Juárez (on Hwy. 45), 1 (BYU 21721).

65.9 mi N Ciudad Chihuahua, 1(BYU 22619).

Kinosternon sonoriensis LeConte

Kinosternon sonoriensis LeConte, 1854, Proc. Acad. Nat. Sci. Philadelphia 7:180–190; Iverson 1981, Tulane Studies in Zoology and Botany, 23 (17:7–74).

Cerocahui, 4 (BYU 14625–28).

Río Bavispe, below Tres Ríos, 1 (BYU 14629).

REMARKS.—Iverson (1981) questioned the occurrence of this species in the Río Fuerte basin. Yet four specimens were taken from a small creek at Cerocahui. This creek drains into the Río Oteros, the northern tributary of the Río Fuerte. Recently, Dr. Iverson reexamined two specimens of the series and confirmed their identity.

The Río Oteros has its headwaters in the same general area as the Río Tomochic, a tributary of the Río Papigochic which is a tributary of the Río Yaqui. The nearness of these streams to each other suggests that the movement from one drainage system to the other is likely, or perhaps stream piracy may have facilitated the southward distribution.

Kinosternon hirtipes murrayi Glass & Hartweg

Kinosternon murrayi Glass & Hartweg, 1951, Copeia 1951:50–52.

Kinosternon hirtipes murrayi Schmidt, 1953, A checklist of North American amphibians and reptiles, p. 89; Iverson, 1981, Tulane Studies in Zoology and Botany 23(1)1–74.

Approximately 2 mi N Casas Grandes 5 (BYU 14132–5 and 15457).

Río Santa María near Galeana, 3 (BYU 16846–8).

Río Santa María above bridge west of Galeana 10 (BYU 15266–75).

Genus *Chrysemys*

Chrysemys picta bellii (Gray)

Emys bellii Gray, 1831, Synopsis reptilium, p. 31.
Chrysemys picta bellii: Bishop and Schmidt, 1931, Publ. Field Mus. Nat. Hist., Zool. Ser. 18:136.
Río Santa María, above bridge west of Galeana, 3 (BYU 15263–4, 15267).

Genus *Terrapene*

Terrapene ornata luteola Smith & Ramsey

Cistudo ornata Agassiz, 1857b, Contributions to the natural history of the United States 1:445.
Terrapene ornata luteola: Smith and Ramsey, 1952, Wasmann J. Bio. 10(1):45–54.
2 mi E Colonia Dublán, 2 (BYU 14646–7).
West edge of Colonia Dublán, 3 (BYU 15449–51).

Family Gekkonidae

Genus *Coleonyx*

Coleonyx brevis Stejneger

Coleonyx brevis Stejneger, 1893, North American Fauna no. 7:163–64; Chrapliwy and Fugler, 1955, Herpetologica 13:121–128.
2 mi N 6 mi E Camargo 1 (KU 33874).

Smith and Taylor (1950) list *C. brevis* from southern Texas southward through eastern Chihuahua. We saw no specimens in central or western Chihuahua. The distribution map provided by Klauber (1945) places the genus *Coleonyx* barely in the eastern edge of Chihuahua. The specimen from NE of Camargo and records from Coahuila (Chrapliwy and Fugler 1955) suggest that this species may be present in much of eastern Chihuahua.

Whether *C. v. bogerti* extends into Chihuahua from southeastern Arizona and southwestern New Mexico must be demonstrated, even though the terrain is seemingly similar in northwestern Chihuahua. Dixon (1970) does not extend the range into Chihuahua.

Genus *Phyllodactylus*

Phyllodactylus tuberculosus saxatilis Dixon

Phyllodactylus tuberculosus saxatilis Dixon, 1964, New Mexico State Univ. Bull. 64(1):31–36.
Urique, 1 (KU 56210).

Cope (1898–1900) lists a specimen collected at Chihuahua City by E. Wilkinson, and Dixon (1964a), a specimen for Batopilas. I have seen only one specimen from Chihuahua and recognize the similar habitat in southwestern Chihuahua and adjoining Sinaloa. It is not to be expected in central and eastern Chihuahua, certainly not at Chihuahua City. The distribution of this species is indicated by Dixon (1964a:124, map 2) and does not include any area east of the Continental Divide.

Family Iguanidae

Genus *Anolis*

Anolis nebulosus (Wiegmann)

Dactyloa nebulosa Wiegmann, 1834, Herpetologica Mexicana, p. 47.
Anolis nebulosus Bocourt, 1873, Mission Scientifique au Mexique, 2:68–69.
Anolis nebulosus Fitch, 1978, Milwaukee Public Mus. Contr. Biol. and Geol., Bull. 20:1–15.
6–7 mi W below La Bufa road bridge across Río Urique, 6 (BYU 22691–7).
Urique, 3 (BYU 14335–7).
2 mi N Maguarichic, 1 (BYU 16915).

There is some variation among the specimens available. However, with some hesitation, I have designated them as *nebulosus*, recognizing that Smith and Taylor (1950) listed *nebuloides* for the species occurring in Chihuahua. It seems more logical to relate the specimens from southwestern Chihuahua to those populations in adjoining Sinaloa and Sonora. This was also the conclusion reached by Duellman (1961) and Hardy and McDiarmid (1969). The habitat in the valley and tributaries of the Río El Fuerte are extensions from the coastal plain, providing a continuum of environment that does not seem to allow for two similar species.

The characters such as keeled ventrals, which are equal to or only slightly larger than the mid-dorsals, the interparietal larger than ear opening, and the faint yellowish pink on the gulars suggest the above designation for the anoles in southwestern Chihuahua.

Genus *Ctenosaura*

Ctenosaura hemilopha macrolopha Smith

Cyclura (Ctenosaura) hemilopha Cope, 1863, Proc. Acad. Nat. Sci. Philadelphia, pp. 105–106.
Ctenosaura hemilopha macrolopha Smith, 1972, Great Basin Nat. 32(2):104–111.
El Realito, at Tarahumara dwelling, 1 (BYU 22675).
Urique, 9 (BYU 14616–24).

Smith (1972) described and listed the distribution of this subspecies as occurring in the

coastal plain of northern Sinaloa, southern Sonora, and with narrow projections extending eastward into the deep river valleys of western Chihuahua. The area of distribution occurs primarily in the low shrub and thorn forests at elevations extending from the Gulf Coast eastward to elevations of 2,000–2,500 feet. Its distribution in Chihuahua is only in the deep barrancas where the coastal habitat has been extended eastward along the rivers.

Genus *Holbrookia*

Holbrookia maculata approximans Baird

Holbrookia approximans Baird, 1858, Proc. Acad. Nat. Sci. Philadelphia, 1858:253.

Holbrookia maculata approximans Stejneger, 1890a, North Amer. Fauna, no. 3.

Montezuma Mountain (between Casas Grandes and Colonia Juárez), 4 (BYU 11370, 15752, and 17098–9).

4 mi E Nuevo Casas Grandes, 3 (BYU 14123–5).

Northwest Chihuahua (NW corner of state), 1 (BYU 30642).

Approximately 18 mi from Colonia Juárez up Tinaja Canyon, 4 (BYU 14415–6, 15790 and 39998).

6.5 mi N Chihuahua City, 1 (BYU 15310).

26 mi S Ascensión, 6 (BYU 15782–5 and 15788–9).

N of Blue Mts. near Garcilancito Saw Mill, 1 (BYU 13597).

Río Bavispe below Tres Ríos, 5 (BYU 13448, 13450, 13452, 13454, and 13469).

Cerocahui, 2 (BYU 14386 and 14606).

8 mi N Cerocahui, 3 (BYU 15674–6).

7 mi S Cuiteco, 2 (BYU 15693–4).

11 mi SW Cuiteco, 2 (BYU 15777–8).

El Kilo, 1 (BYU 14339).

30 mi S Ciudad Juárez, 1 (BYU 15209).

The Chihuahua series represents samples from a wide area of central, northern, and western parts of the state. Within this area the following scale and color patterns were obtained: Ventrals 60–80 (69.8), 61–75 (67.65); femoral pores, totals, 18–25 (22.75), 14–27 (21.50). Adults range in S-V length from 50 to 66.5 mm. The greatest total length is 116 mm. Adult males were larger than females in both S-V and total length. In males the tail was always longer than the S-V length, ranging from 52 to 57 percent. In females the ratio is 40–48 percent.

Five females were gravid and contained 3–7 yolking eggs. One of the five females (13454) taken along the Río Bavispe on 29 May 1956 contained 5 eggs. The eggs were round and approximately 3.5 mm in diameter. In July and August the eggs were much larger (14606, 8.5, and 14125, 9.5 mm). The smallest gravid female was 46 mm S-V and the largest 60 mm.

Dorsal color patterns were variable, ranging from those with two rows of chevron spots from nape to tail to those from east of Nuevo Casas Grandes that are almost uniformly plain gray. In the latter the diagonal black bars on each side of the abdomen are faint in contrast to others. In females the diagonal bars tend to be faint in contrast to the males and do not have the blue edging common in adult males. The dorsal pattern in males, the two rows of chevron spots, may resemble that of females, but the ground color is usually a darker gray. In one specimen (BYU 17098) from west of Casas Grandes, an adult male, the dorsum on each side of a plain dark gray median area is speckled with small white spots, each spot involving 1–3 scales. The dark chevron spots usually present are absent anteriorly but present posteriorly and on the base of the tail.

The female specimen from 30 mi S of Ciudad Juárez was taken in a sand dune area and should perhaps represent the subspecies *bunkeri*. The dorsal pattern is light gray to almost cream color, without spots except near the tail. Its basic color and diagonal belly spots are similar to three specimens from 4 mi E of Nuevo Casas Grandes, that is, faint and without any surrounding blue. Other scale characters are: ventrals 75 and femoral pores 11–11. Total length 116, S-V 56.5, hind leg approximately 42 mm. Percent of tail to S-V length 51.5, which is higher than in females from the central valleys; ratio of hind leg to snout-vent length, 0.75. The head scales are not noticeably different from *H. m. approximans;* that is, the supralabials are not flared and appear the same as others in this series.

Because I cannot recognize differentiating characters between this specimen and most others in the series, I have retained it in this subspecies. A larger series from this sand dune area, which is near the type locality, may prove the existence of the subspecies *bunkeri* in northeastern Chihuahua (Smith 1935).

Genus *Cophosaurus*

Cophosaurus texanus scitulus Peters

Cophosaurus texanus Troschel, 1850 (1852), Wiegmann's Arch. für Naturg., Jahrg. 16, 1:289.

Holbrookia texana: Baird and Girard, 1852, Proc. Acad. Nat. Sci. Philadelphia 6:124.

Holbrookia texana scitula Peters, 1951, Occa. Pap. Mus. Zool., Univ. Michigan 537:8–11.
3 mi S Las Palomas, 1 (BYU 14507).
6 mi N Chihuahua City, 5 (BYU 15301, 15304, 15311, 15333, and 16985).
19 and 33 mi S Chihuahua City, 2 (BYU 15712 and 15814).
16 mi S Ascensión, 2 (BYU 17015–16).

The ventrals range from 75 to 95 (82.2) and the femoral pores are 11–16 (14.1), total 25–31 (28.2). Other scale and color patterns are well within the parameters set forth in the original description. Three male specimens from northern Chihuahua north of Highway 10 (El Sueco–Colonia Juárez) have more ventrals, 84–95 (90.0), than those from near Chihuahua City and south, 75–83 (78.3). Peters (1951) examined 19 specimens, 8 from the north and 11 from south Chihuahua, but did not note such a variation. The type from 16 miles north of Tucson, Arizona, is a male with 83 ventrals, which is approximately average for males reported for Arizona (Peters 1951:16).

In Chihuahua, this species seemed to be gregarious and to inhabit rocky outcroppings. None was found in the brushy valleys unless a rocky bank occurred along a stream bed or an arroyo.

The series ranged in S-V size from 26.2 to 81.0 mm. Four hatchlings were collected. The smallest, 26.2 mm, was found 23 July 1958, 19 miles south of Chihuahua City near Highway 45. Three were taken 9 September 1959, 6 miles north of Chihuahua City, and measured 28.8, 31.2, and 34 mm.

Genus *Crotaphytus*

Crotaphytus collaris fuscus Ingram & Tanner

Crotaphytus collaris fuscus Ingram and Tanner, 1971, Brigham Young Univ. Sci. Bull., Biol. Ser. 13(2): 1–29.
6.5 mi N and 1.5 mi W Chihuahua City, 26 (BYU 14211–12, 15305, 15325–31, 15817–22, 16969–77, 17810).
Colonia Juárez, 1 (BYU 13736).
28.6 mi S Las Palomas, 1 (BYU 17014).
12 mi SE Nuevo Casas Grandes, 1 (BYU 15184).
Tinaja Canyon NW Colonia Juárez, 4 (BYU 15185–8).
5 mi W Ricardo Flores Magón, 5 (BYU 13382–6).
18.5 mi E Ricardo Flores Magón, 2 (BYU 13410–11).

Ingram and Tanner (1971) described the subspecies *fuscus* from the series listed above and compared the types to a large series from the Great Plains, New Mexico, Arizona, Utah, and Coahuila. From these data it was determined that *fuscus* was unique, having a dull color pattern when compared to other subspecies in the *collaris* complex. The predominant greens and yellows were not present, with only browns and black involved in the throat, nape, and collar patterns. Furthermore, the basic ground color is white or light cream, both dorsal and ventral. This is in contrast to the green body of *collaris*, *baileyi*, and *auriceps* and the infusion of yellow to gold coloring on legs, body, and particularly the head of *auriceps*.

The nape collars are widely separated dorsally with the first having 10 or more scales between the two lateral dark bars and with usually 5 dorsal scales separating the second collar. The ventral ends of the second collar extend onto the forearm.

The distribution extends south through central Chihuahua from southern New Mexico and southeastern Arizona, and west into north central Sonora, where intergradation occurs with *baileyi* and perhaps also with *dickersonae*. *Crotaphytus c. nebrius* Axtell & Montanucci (1977) appears to be an intergrade between *fuscus* and *baileyi*. The extent of the distribution of *fuscus*, *dickersonae*, and *baileyi* in northern and central Sonora and the extent of the distribution of *fuscus* in Chihuahua are not yet fully determined.

Crotaphytus (Gambelia) wislizenii wislizenii Baird & Girard

Crotaphytus wislizenii Baird and Girard, 1852b, Proc. Acad. Nat. Sci. Philadelphia (type locality near Santa Fe, New Mexico). In Stansbury's explorations and survey of the valley of the Great Salt Lake of Utah, pp. 340–341, pl. 3.
Gambelia wislizenii wislizenii Smith, 1946, Handbook of lizards, pp. 159–164, pl. 30.
Crotaphytus wislizenii wislizenii Schmidt: 1953, A check list of North American amphibians and reptiles. Amer. Soc. Ichy. and Herpt., p. 117.
1 mi S Ahumada, 3 (USNM 104738–40).
6 mi SW Rancho María, 1 (USNM 10471).
Rancho María, near Progreso, 10 (USNM 104741–50).
Santa María, 1 (CHNH 1639).
Lake Santa María, 1 (USNM 47414).

This species apparently occurs only in northern Chihuahua between Ciudad Juárez and Moctezuma (Smith and Taylor 1950 list two localities, 11 mi S Ahumada and 2 mi S

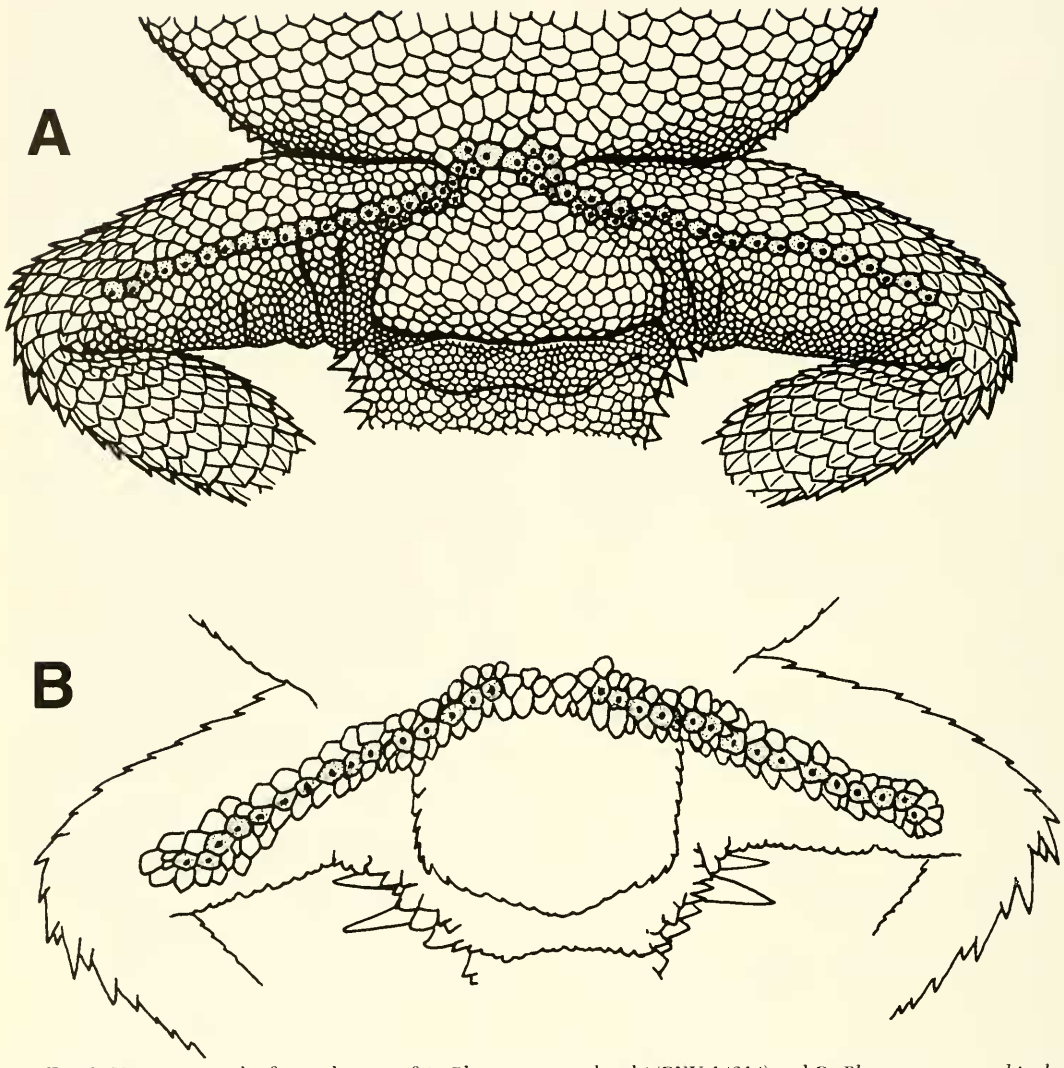

Fig. 3. Variations in the femoral pores of A, *Phrynosoma o. bradti* (BYU 14314) and B, *Phrynosoma o. orbiculare* (BYU 41295).

Moctezuma). We spent only a few hours collecting in these localities and did not see a leopard lizard. In areas where we spent considerable time south and west of El Sueco, none were seen. The mostly brushy habitat is more suited to this species than are the sandy desert valleys in northern Chihuahua.

Genus *Phrynosoma*

Four species of horned lizards are known to occur in Chihuahua. Two are widespread in the desert valleys east of the Sierra Madre (*cornutum* and *modestum*), and the third (*douglassii*) occurs along the eastern foothills and westward in the northern mountains. The distribution of *orbiculare* is least understood. Its locality records indicate a distribution in the mountains of southern Chihuahua. Taylor and Knobloch (1940) list two specimens from or near Mojarachic and report the femoral and preanal pores to be 24–24 and 25–26, with each femoral series meeting medially or only narrowly separated. Reeve (1952) apparently examined these specimens but failed to point out this unusual increase in pores, indicating only that in *orbiculare* the pores number 14–15 and are separated medially by five preanal scales. Horowitz (1955) reviewed the species *orbiculare* and described as new the Durango and Chihuahua populations.

Phrynosoma orbiculare bradti Horowitz

Lacerta orbicularis Linnaeus, 1789, Systema Naturae, ed. 12, Vol. 1, p. 1062 (part based on Hernández).
Phrynosoma o. orbiculare Smith, 1934, Trans. Kansas Acad. Sci. 37:200.
Phrynosoma o. bradti Horowitz, 1955, Amer. Midl. Nat. 54(1):204–218.
West rim, Barranca del Cobre, west of Urique, 1 (BYU 14314).
Cienega la Prieta (north of Tubares on mountain well above the Río San Miguel), 1 (BYU 22659).
21 mi S Miñaca, 1 (ANSP 20001).
6 mi S and 5 mi E San Juanito, 1 (KU 44163).
15 mi S and 6 mi E Creel, 1 (KU 44164).
7 mi SE Cerocahui, 1 (KU 56211).
1 mi NW Urique, on Río Urique summit of Punto Gallego, 1 (NMMZ 41952).

The specimens listed above were not included in the original description. The Chihuahua series now available in museum collections consists of at least 15 specimens. Additionally, I examined one of those seen by Horowitz (1955), ANSP 20001. Perhaps the most significant character in this series is the large number of femoral pores. Those examined by me range from 44 to 70 and average 53.2. This is an increase over those reported in the original description (43–55, $\bar{x} = 49.0$). A character of importance is the development of two or three rows of pores in 6 of 7 specimens examined (Fig. 3). The second or third rows are shorter, ranging from 5 to 8 pores on a thigh, and they may or may not meet at the ventral midline. This increase in rows may account, in part at least, for the large number of pores. A single row on each femur, not meeting medially, has apparently resulted in fewer pores in the populations south of Chihuahua; however, this was not discussed by Horowitz (1955).

The following scale patterns were observed: ventrals from gular fold to femoral pores 43–53 (46), and 10–14 from femoral pores to anus; supralabials 8–10; infralabials 6–9; scales in lateral fringe variable, 21–29. Color pattern with less pigmentation, both dorsal and ventral surfaces; 3 or 4 narrow brown cross bars on dorsum of body and venter with small spots or light reticulations. A specimen of *P. o. orbiculare* (BYU 41295) from 4 mi N Trés Cumbres, Distrito Federal, is heavily pigmented both dorsally and ventrally, with 7 dark cross bars edged posteriorly by a cream bar, pores 15 on each thigh and separated by 5 scales.

It is not the intent here to further examine the subspecies occurring south of Chihuahua. However, an in-depth examination of the color and scale patterns would, I believe, provide additional diagnostic characters not provided in the study by Horowitz (1955). The scale patterns between the occipital spines and anterior to the parietal show noticeable variations between the subspecies *bradti* and *orbiculare*. The distribution of *bradti* is poorly known for southern Chihuahua and northern Durango. Horowitz indicates that the range may extend into Sonora and, if so, then perhaps into the general area of the mountains near Yecora.

Montanucci (1979 and 1981) adds considerably to an understanding of the systematics, distribution, and ecology of *P. orbiculare*. The subspecies *bradti* is retained to include *durangoensis*. His expanded report on the habitats and food habits is essentially what we observed for *Phrynosoma* in the foothills and mountains of western Chihuahua.

Phrynosoma cornutum Harlan

Agama cornuta Harlan, 1825, J. Acad. Nat. Sci. Philadelphia 4:299.
Phrynosoma cornutum Gray, 1831, Syn. Rept. in Griffith's Anim. King., p. 45.
20 mi S Las Palomas, 2 (BYU 16967–8).
45 mi S Ciudad Juárez, 1 (BYU 21716).
5 mi W Ricardo Flores Magón, (BYU 13388).
14 mi W Ricardo Flores Magón, 1 (BYU 15335).
19 mi W Ricardo Flores Magón, 3 (BYU 13414–5 and 13401).
1 mi W Sueco, 1 (BYU 15361).
3 mi E Buenaventura, 1 (BYU 40078).
5 mi E Colonia Dublán, 2 (BYU 14126, 14649).
3.8 mi SE Nuevo Casas Grandes, 1 (BYU 15585).
7 mi NW Chihuahua City, 1 (BYU 15824).
37 mi S Chihuahua City (on Road 45), 1 (BYU 32032).

Reeve (1952) added the following additional localities: Ascensión (27 mi N), Casas Grandes, 19 mi E Casas Grandes, 14 mi E Casas Grandes, Chihuahua City, Moctezuma, 30 mi N Moctezuma, Río Santa María near Progreso, 12 mi E San Buenaventura, Santa María, Santa Rosa, and White Water Monument. These and other records are referred to by Reeve and include collections reported from the Field Natural History Museum (Schmidt and Owens 1944) and from the U.S. National Museum (Reeve 1952).

The distribution of this species, as indicated by the above records, is in the desert flats east

of the foothills of the Sierra Madre Occidental. Their habitat is primarily in the low shrub desert flats and along the edges of the rocky foothills that extend as low ranges east of the western mountains.

Phrynosoma cornutum appears to be the most common horned lizard seen in the low valleys of central and eastern Chihuahua. However, *P. modestum* may be as abundant in this habitat, but its smaller size and camouflaged pattern render it less obvious.

Phrynosoma modestum Girard

Phrynosoma modestum Girard, 1852, Stansbury's explorations and survey of the valley of the Great Salt Lake, pp. 361–365, pl. 6; Smith and Taylor, 1950, Univ. Kansas Sci. Bull. 33(2):313–380. (Type locality of this species restricted to Las Cruces, New Mexico, p. 359).
9 mi E Nuevo Casas Grandes, 2 (BYU 13841–2).
1 mi W Sueco, 1 (BYU 15362).
20 mi S Las Palomas, 1 (BYU 14607).
Colonia Juárez, 1 (BYU 17043).
6.7 mi N Chihuahua City, 6 (BYU 15306, 16980–16984).
33 mi S Chihuahua City (on Highway 45), 1 (BYU 15813).

Reeve (1952) listed 11 specimens from the following localities: 1 mi S Villa Ahumada, Chihuahua City, 4 mi NW near Progreso Río Santa María, Santa María, and 8 mi N Samalayuca.

The distribution in Chihuahua is in the low desert valleys of the north, extending south and east of the mountains to northeastern Durango and eastern Coahuila.

The tympanum is concealed in a fold between the angle of the mouth and the last large temporal spine. Unlike other species in the genus, in most Chihuahua specimens there is no visible tympanic membrane. When a membrane is present, it is small and deeply concealed in a temporal fold of skin.

In the series (12 specimens) from Chihuahua the femoral pores range from 9 to 13 and average 10.3 on each femur. In a series from southern Arizona, New Mexico, and Texas, the pores range from 9 to 16 and average 12.0. Smith (1946) lists the femoral pores as 10–15 for the species, and Reeve (1952) lists them as 7–13. The high counts (11–16) came from five specimens from Graham County, Arizona, with only 3 of the 10 femoral pore counts being less than 14.

The color pattern of this species rendered it difficult to see unless an individual moved. On 21 July 1960, on the gradual slopes of the bajada extending west from Highway 45, a few miles north of Chihuahua City, we collected five, none of which were seen until disturbed by our walking close to them. Their escape from predators undoubtedly depends to a great extent on the ability to blend their body color pattern to match closely the substrate of their habitat.

Phrynosoma douglassii (Bell)

Phrynosoma douglassii occurs in both the foothills of central Chihuahua and in the highlands north of the Río Papigochic. Those along the eastern edge of the mountains from Colonia Juárez to at least the area near Cuauhtémoc and including the population reported by Van Devender and Lowe (1977) belong to the subspecies *hernandesi*. Those taken in the mountains southwest of Casas Grandes have the basic characteristics of *brachycercum*.

Since the distribution of the subspecies of *douglassi* in Chihuahua and Durango is poorly known, one can only speculate as to the extent of the area occupied by each subspecies. Furthermore, the type locality of *brachycercum* may be as Reeve (1952) listed, 5 miles north of Durango City, or it may be in the mountains to the west. A specimen (BYU 41328) taken 29 September 1974 at El Salto suggests that *brachycercum* also occurs in the mountains of Durango. We are not suggesting that this subspecies does not occur in the foothills north or west of Durango City but rather that its distribution may occur over a wide area in the south and extend north only in the higher mountains. We need considerably more specimens before the distribution of this species and its subspecies will be understood.

I have not seen the specimens from the vicinity of Santa Bárbara, Chihuahua, reported by Reeve (1952). The area west of the city rises abruptly to 8,000–9,000 feet and may represent the habitat from which the specimens came. In spite of these speculations we will, with this report, have more information than has been available to date.

Phrynosoma douglassi hernandesi Girard

Tapaya hernandesi Girard, 1858, United States exploring expedition for the years 1838, 1839, 1840, 1841, and 1842 under the command of Charles Wilker ASN; Vol 20:395, herpetology.

Phrynosoma douglassi hernandesi Cope, 1898 (1900), Report U.S. Nat. Mus., p. 413, fig. 70.
Colonia Juárez (environs), 15 (BYU 13508, 14333, 15193–15202, 15750, 16966, and 17110).
13 mi E Cuauhtémoc, 3 (BYU 14484, 15203, and 15691).
Sierra del Nido, 2 (UTEP 2520–1).

Van Devender and Lowe (1977) list 26 specimens from the following localities: General Trías, 25 km N Gómez Farías on Mexico 10, Temosachic, and Yepomera.

These specimens are placed in this subspecies on the basis of the following characteristics: tail longer than width of head at the temporals and chest scales smooth without keels on any scales. In males the tail is noticeably longer than in females, giving a greater difference when compared to head width. Although all females have longer tails than their head width, in some it is only by 1–5 mm.

Large specimens (133 mm or more in total length) taken in late June or July were brightly colored with red and pink markings around the mouth and on the sides. The dorsal body blotches were distinct when an individual was in hand. On the ground the pattern blended with the substrate so that few were seen before they moved.

Phrynosoma douglassi brachycercum Smith

Phrynosoma douglassi brachycercum Smith, 1942, Proc. U.S. Nat. Mus. 92(3153):362–3; Reeve, 1952, Univ. Kansas Sci. Bull. 34, part 11, no. 14; pp. 916–918.
Chuhuichupa, 2 (BYU 14502–3).

Both specimens are females with the head width and tail length equal and with some of the chest scales with keels. Both are adults 116–117 mm in total length, of which only 25–26 mm is tail. In one, the head width at the temporals is 25 mm, and in the other 26.

The Chuhuichupa Valley lies in the headwaters of the Río Bavispe. The town is nearly surrounded by grassland and meadows with pine forests on the east, south, and west. Apparently the grass areas and meadows north of the town had been present for a long time and were not the result of timber removal. It was in this area that the lizards were found. This valley is similar to some of the high mountain and plateau basins of southern and central Utah where *P. d. hernandesi* occurs.

Genus *Sceloporus*

The genus *Sceloporus* is the most widespread and diversified lizard genus in Chihuahua. It is represented by nine species, two of which are represented by two or more subspecies. This is based only on collections made west of Highway 45. Additional species, such as *S. merriami*, may enter along its eastern border from populations in Coahuila (Smith and Taylor 1950:132). Few habitats have not been occupied by at least one member of the genus; representatives are found in the deserts, along wooded streams, and in the various mountain habitats.

Few North American saurian genera have undergone such pronounced speciation as has *Sceloporus*. Smith (1939) and Larsen and Tanner (1974, 1975) have attempted to determine relationships within its members by arranging them in related groups. By using 80 characters and applying numerical statistical methods to them, Larsen and Tanner (1974, 1975) concluded that there were three distinct species groups in the genus *Sceloporus*. Furthermore, it was concluded that the most primitive group, including such species as *gadoviae*, *couchi*, and *merriami*, had basic characters which set them apart from the other two groups and thus should be placed in a separate genus, *Lysoptychus* Cope (1888).

With *merriami* occurring in eastern Chihuahua, there are representative species of all three groups, as designated by Larsen and Tanner (1975), occurring in Chihuahua. The speciation, resulting in 60 or more species, is a further indication of the genetic flexibility of this genus, as now recognized, which has established itself abundantly and prominently in nearly all, if not all, habitat niches. Such species as *jarrovii* and *poinsettii* were apparently present (one or both) at nearly all collecting sites. A species of this genus was generally one of the first to be collected.

Our field trips have traversed much of the state except the mountains of southern Chihuahua and the eastern deserts. The collections resulting from these trips will serve as the basic material used in the following species reports. Only when it is deemed necessary for clarity is outside material included.

Sceloporus clarkii clarkii Baird & Girard

Sceloporus clarkii Baird and Girard, 1852a, Proc. Acad. Nat. Sci. Philadelphia 6:127.
Sceloporus clarkii clarkii Cope, 1875a, U.S. Nat. Mus. Bull. 1:49–92.
Río Bavispe, below Tres Ríos, near Chihuahua-Sonora line, 24 (BYU 13369–70, 13429, 13431–33,

13494–13502, 13506, 13584–89, 13592, and 14554).
2 mi W Colonia Juárez, 2 (BYU 13440–1).
Red Rock, 12 mi up Tinaja Canyon from Highway 10, 1 (BYU 13854).

Sceloporus clarkii clarkii was found in the canyons of northern Chihuahua on both sides of the Continental Divide. Specimens were not found in the highlands but at intermediate areas where cottonwoods and other trees occurred along streams. We did not collect this subspecies south of Colonia Juárez. Van Devender and Lowe (1977) did not report it from Yepomera, and I have no report of its occurrence from other studies south of those reported above.

The scale patterns are as follows: dorsals 30–35 ($\bar{x}$ = 32.7), ventrals 39–47 ($\bar{x}$ = 42.0), femoral pores 9–13 (total 23.5), supraoculars 5 (with two specimens having 4–5). The largest specimen, an adult male, is 96 mm S-V.

Sceloporus clarki uriquensis
Tanner & Robison

Sceloporus clarki uriquensis Tanner and Robison 1959, Great Basin Nat. 19(4):75–82.
Sceloporus clarki boulengeri Hardy and McDiarmid 1969, Univ. Kansas Publ., Mus. Nat. Hist. 18(3):129–134.
Urique, 3 (BYU 1410–12) and 3 (KU 56215–17).
1 mi N Maguarichic, 9 (BYU 16890–98).
Area above Pitahaya, on the Río San Miguel, 3 (BYU 22678–9, 22682).
23 mi S 1.5 mi E Creel, Barranca del Cobre, 1 (KU 44175).

Hardy and McDiarmid (1969) examined a large series of *Sceloporus clarki* (140) from Sinaloa and three specimens (KU 56215–17) from Urique, Chihuahua. On the basis of this series, they conclude that *S. c. uriquensis* is a variant of *S. c. boulengeri*. They also implied that such a conclusion pertains to all populations inhabiting the Río El Fuerte basin. Hardy and McDiarmid (1969) did not examine the types of *S. c. uriquensis* or other available specimens from the basin. An examination of the material, as listed above, does indicate that there are differences not only in scalation but also in color pattern between *S. c. boulengeri* and *S. c. uriquensis*, which were not, apparently for lack of material, noted in their report.

The naming of a new taxon from a single specimen or a few specimens is at best hazardous; yet this is often done in the hope that the material at hand is representative of the population. The naming of *S. c. uriquensis* is a case in point, and Hardy and McDiarmid (1969), based on their data, were perhaps justified in their conclusions. In some scale patterns there is considerable overlapping, as there is in most subspecies with adjoining areas of distribution. However, in this case we are dealing with river basin isolation. Such species with the degree of variation present in *S. clarki* are particularly susceptible to character modifications arising from a reduced gene flow occurring in such instances.

The following data are derived from 17 specimens from Chihuahua, including the three topotypes (KU 56215–17): dorsal scales 28–33 ($\bar{x}$ = 29.8), ventral scales 40–47 ($\bar{x}$ = 44.0); scale rows 34–38 ($\bar{x}$ = 36.2); supralabials 4–5 ($\bar{x}$ = 4.35); infralabials, range 5–7; nasal separated from lorilabials, 12 of 26 = 46%; one scale between subocular and labial below eye, 9 of 26 = 34.6%; postmentals reduced to 2 or 4 = 100%; four supraoculars, 12 of 26 = 46%; femoral pores 11–14 ($\bar{x}$ = 12.1). Although there is considerable similarity between most of the characters of the larger Chihuahua series and the Sinaloa series (Hardy and McDiarmid 1969), some noteworthy differences do appear. The dorsals are reduced to approximately 30 scales and barely approach the lower limits of the Sinaloa series. The femoral pores are noticeably reduced and may only reach the lower limits of the Sinaloa series (14–24 per femur). In the Chihuahua series (17 specimens) the femoral pores range from 11 to 14 per femur, total 23–27 ($\bar{x}$ = 24–29). In this series the individual femoral pore counts are as follows: 4 specimens 11–12, 7 with 12–12, 4 with 12–13, 1 with 13–13, and 1 with 13–14. This range ($\bar{x}$ = 12.12) per femur barely reaches the lower limits in one series (Culiacán) listed by Hardy and McDiarmid (1969:130, Fig. 8).

In the description of *S. c. uriquensis* it is clearly stated that the femoral pores were reduced to 12–12; however, a large series of *S. c. boulengeri* was not available at the time of the description to emphasize the importance of this character. In neither study has this character been given the consideration it obviously deserved. Other scale patterns do not provide adequate distinctions to separate the two subspecies. Tanner and Robison (1959) recognized the uniqueness of *uriquensis* based primarily on the color pattern. The

green head cap in males is not seen in either *c. clarki* or *c. boulengeri*. Furthermore, the dorsolateral stripe, usually present in the other subspecies, is absent or faint in *c. uriquensis*.

The reduced femoral pores, reduced dorsals, the green head cap in males, and the near absence of the dorsolateral light stripes, particularly in males, serve to distinguish *S. c. uriquensis* from other subspecies of *Sceloporus clarki*.

The distribution of *S. c. uriquensis* at present includes only the Río El Fuerte basin of Chihuahua. A specimen from Alamos, Sonora (MCZ 43253), has an increase in dorsals (33) and ventrals (51) but has reduced femoral pores (11–12). It is a juvenile male (58 mm S-V) with tannish brown color and with no indication that a green head cap was present. Intergradation may occur in the adjoining areas west of the steep escarpment of western Chihuahua.

Sceloporus magister bimaculosus Phelan & Brattstrom

Sceloporus magister Hallowell, 1854, Proc. Acad. Nat. Sci. Philadelphia 7:93.
Sceloporus magister magister Linsdale, 1932, Univ. California Publ. Zool. 38:365.
Sceloporus magister bimaculosus Phelan and Brattstrom, 1955, Herpetologica 11(1):9–10.
NW Chihuahua, south of Antelope Wells, 1 (BYU 30644).
.5 mi S Las Palomas, 1 (UTEP 3460).

We did not find that the geographical range of this species extends much below the northern edge of the state. Smith and Taylor (1950) extend the range east and south into Coahuila and Durango. It was not found throughout central Chihuahua and may occur to the east of Highway 45 where we did not collect.

Phelan and Brattstrom (1955) list a specimen (USNM 2964) from between El Paso, Texas, and Janos in northwestern Chihuahua. The distribution of this species in Chihuahua is not yet fully determined. Parker (1982) lists it for northern and eastern Chihuahua.

Sceloporus horridus albiventris Smith

Sceloporus horridus albiventris Smith, 1939, Publ. Field Mus. Nat. Hist., Zool. Ser. 26:108–10.
Urique, 6 (BYU 14304–09).
1 mi N Maguarichic, 1 (BYU 16908).
Area above Pitahaya, near Río San Miguel, 1 (BYU 22680).

The scalation is as follows: scale rows 31–38 (33.7); dorsals 31–35 (33); ventrals 31–37 (34.9); supralabials 5–5 no variation; infralabials 6–7 (6.4); femoral pores 3 or 4, total per specimen $\bar{x} = 6.38$; the largest, an adult male S-V 88.1 mm; the smallest, a hatchling, taken 13 October 1964, S-V 38 mm.

The femoral pores average approximately one more (6.4) than the series reported for Sinaloa (5.8) by Hardy and McDiarmid (1969). Other scalation patterns do not differ. The color pattern as reported by Cope, 1898 (1900) and Tanner and Robison (1959) is distinctive, with males having a red to a reddish orange head cap. This is a most conspicuous character and is reminiscent of other species having this unusual characteristic, such as *Crotaphytus*, *C. auriceps* (Utah), and *Agama a. lionotus* (Kenya). Unfortunately, some color and color patterns are lost in preserved specimens; yet such color characteristics in live individuals represent a special distinction.

Sceloporus undulatus consobrinus Baird & Girard

Sceloporus consobrinus Baird and Girard, 1853, in Marcy and McClellan, Explorations of the Red River of Louisiana, pp. 224–226.
Sceloporus undulatus consobrinus Cope, 1898 (1900), Ann. Rept. U.S. Nat. Mus., pp. 377–380.
30 mi S Ciudad Juárez, 1 (BYU 15253).
5 mi E Ricardo Flores Mágon, 1 (BYU 13387).
1 mi W Sueco, 6 (BYU 15363–8).
18.5 mi E Ricardo Flores Magón, 10 (BYU 13402, 13405, 13412–13, 15363–68).
2 mi N Colonia Juárez, 10 (BYU 13348–50, 13352, 15189–91, 15748–49, 15751).
30 mi S Ascensión, 1 (BYU 15786).
20 mi N Colonia Dublán, 1 (BYU 15787).
Mouth of Tinaja Canyon, 1 (BYU 15791).
Colonia Juárez, 10 (BYU 17017–20, 17037–42).
6 mi N Chihuahua City, 5 (BYU 15302–3, 15308, 15332, 16986).
19 mi by highway S Chihuahua City, 1 (BYU 15713).
33 mi by highway S Chihuahua City, 1 (BYU 15815).
50 mi W (by Highway 16) Chihuahua City, 3 (BYU 13826–28).
Call Canyon, near Colonia Juárez, 2 (BYU 41769–70).

The data provided by Smith (1939) for *Sceloporus u. consobrinus* are essentially the same in all characters for the Chihuahua specimens. Cole (1963) confirms the previous reports and adds valuable ecological and life history data. An examination of my field notes indicates basically the same altitudinal distri-

bution data as that provided in the Cole report. Most of the specimens seen and collected were along the valley roads, many of them sunning on rocks and mounds of soil which had been left as the roads were constructed. In these habitats, *consobrinus* was seen repeatedly throughout central Chihuahua. Their behavior in this regard is reminiscent of other subspecies such as *u. tristichus* and *u. elongatus*.

The scale patterns (46 specimens) are summarized as follows: dorsals 37–44 (40.5); femoral pores, 11–18 on single femur, average 15.9, total per specimen 25–36, average 31.8. These data are almost identical to those provided by Smith (1938) and Cole (1963).

Sceloporus virgatus Smith

Sceloporus undulatus virgatus Smith 1938. Occ. Pap. Mus. Zool. Univ. Michigan 387:11–14.
Sceloporus virgatus Cole, 1963, Copeia No. 2:413–425.
Río Bavispe, below Tres Ríos, 1 (BYU 13435).
8 mi W Chuhuichupa, 6 (BYU 14262–6, 15486).
4 mi N Chuhuichupa, 2 (BYU 15425–6).
Cuiteco, 2 (BYU 14267–8).
Cerocahui, 1 (BYU 14605).
Between Cerocahui and W rim of Barranca del Urique, 2 (BYU 15648–9).
25 mi W Colonia Juárez on road to Tres Ríos, 9 (BYU 15442–8, 15807–8).
Meadow Valley, 1 (BYU 15715).
2 mi N Maguarichic, 1 (BYU 16916).
10 mi SW San Pedro, 7 (BYU 15487, 17030–35).
28 mi SW San Pedro, 1 (BYU 15488).

San Pedro is a ranch on the west side of the Río Papigochic. Miñaca is across the river on the east bank.

In Chihuahua *Sceloporus virgatus* can be readily distinguished from other sympatric species by its small adult size (50–55 mm S-V), distinct dorsolateral and lateral stripes, and absence of blue belly patches on all specimens. Cole (1963) lists the dorsals in 9 Chihuahua specimens as 34–40, with an average of approximately 37.2. The 33 specimens listed above are 34–39 (36.94). Our series shows the femoral pores to be 25–31 (26.85). This is slightly more than those averaged by Cole. If the two specimens from the lower Río Bavispe BYU 13435 (15–15) and 13490 (15–16) are removed, the averages for femoral pores for the two series are nearly equal. There is reason to suspect that these populations, as do other species from the Bavispe basin (e.g., *Thamnophis e. errans*), show a relationship to populations to the north. Only below Tres Ríos do we see an increase to 30 or more femoral pores. In other samples in Chihuahua, only three specimens have 15 pores and this on only one femur. The predominant pore formula is 13–13, 13–14, or 14–14. Data from the Cole study and data available to me show a north-to-south cline in the basic characters. Chihuahua specimens have an average of fewer dorsals, scale rows, and femoral pores than populations in Arizona and New Mexico.

The elevation of *virgatus* to a full species is justified not only on the basis of the characters listed by Cole (1963) but also from the fact that *virgatus* is allopatric to all members of the *undulatus* group. In our travels we found them only in the oak and oak-pine habitat, well above the desert foothills where *S. u. consobrinus* occurs. However, the small blue patches on each side of the throat do suggest a relationship to the *undulatus* group, where it has been placed with *undulatus*, *occidentalis*, *graciosus*, and *woodi* (Larson and Tanner 1975).

Sceloporus grammicus disparilis Stejneger

Sceloporus disparilis Stejneger, 1916, Proc. Biol. Soc. Washington 29:227–230.
Sceloporus grammicus disparilis Smith and Laufe, 1945, Trans. Kansas Acad. Sci. 48:332–333.
1 mi S Chuhuichupa, 8 (BYU 13927–34).
3 mi N Chuhuichupa, 2 (BYU 13937–8).
24 mi from Colonia Juárez, on road to Tres Ríos, 1 (BYU 15809).
García, 3 (BYU 32233–5).
Cienega la Prieta, 4 mi W Guachochic, 8 (BYU 22660–7).
La Mesa de Arturo, 1 (BYU 22673).

Those specimens taken north of the Río Papigochic were in timbered habitats at elevations ranging up to 8,000 feet. South of Chuhuichupa the habitat was near old pine stumps and fallen logs. The largest specimens were 50 mm in S-V length.

Scale patterns ranged as follows: dorsals 61–73 and femoral pores 12–17 (total average 27.2). Those north of the Río Papigochic have a reduced series of dorsals 61–70 ($\bar{x}$ = 65.4) in contrast to those in the Río Fuerte basin at 64–73 ($\bar{x}$ = 69.0). The pores are also reduced in the northern populations 12–14 (total $\bar{x}$ = 26.0). Color patterns did not seem to vary.

The variations in *Sceloporus grammicus* are not well known. At present this species is being studied throughout its total range. Therefore, in this study only the obvious vari-

ations in the Chihuahua specimens are reported, with no attempt to compare them to southern populations.

Sceloporus poinsettii Baird & Girard

This large, attractive *Sceloporus* occurs from southern New Mexico and Texas south in Mexico through Coahuila to Nuevo León to the east and throughout Chihuahua and Durango to northern Zacatecas. The most western locality is in extreme eastern Sonora at Nutria Creek, a small tributary of the Río Bavispe. Within this large area of distribution there are three subspecies presently recognized. The nominate subspecies, *poinsettii*, as it is now understood, occurs in the north and east, New Mexico, Texas, northern Chihuahua, northeastern Sonora, northern and eastern Coahuila, and Nuevo León. To the west *macrolepis* is in northern Zacatecas and the highlands of western Durango. In Chihuahua, considerable intergrading occurs and will be discussed below.

Sceloporus p. polylepis appears to be a smaller representative of the species and to inhabit the lower foothills and valleys of southern Chihuahua and east central and northeastern Durango. It may also occur in southwestern Coahuila. Apparently, the distribution of this subspecies is entirely within the enclosed basins of north central Mexico.

Specimens from areas west and south of Chihuahua City show considerable variation both in the number of dorsal scales and femoral pores. Except for a population in southwestern Chihuahua, the area consists of populations with variable characteristics that are obviously related to the other subspecies both to the north and south. The population in the Río Oteros basin has variations that show intergradation but also possesses destructive characters.

Sceloporus poinsettii poinsettii Baird & Girard

Sceloporus poinsettii Baird and Girard, 1852a, Proc. Acad. Nat. Sci. Philadelphia, 6:126–127.

Sceloporus p. poinsettii Smith and Chrapliwy, 1958, Herpetologica 13:267–270.

Colonia Dublán, 6 (BYU 401, 1323–5, 15386–7).
11.5 mi SE Nuevo Casas Grandes, 1 (BYU 13853).
14 mi W Ricardo Flores Magón, 1 (BYU 15334).
60 mi S Gallego (on Highway 45), 1 (BYU 13926).
4 mi N Chuhuichupa, 1 (BYU 15424).
25 mi W Colonia Juárez on road to Tres Ríos, 4 (BYU 15436–9).
Río Chico, 1 (BYU 15753).
Cuesta el Toro, 5 mi S Gómez Farías, 2 (BYU 15692–3).
NW Chihuahua (W Janos), 1 (BYU 30645).
7 mi E Buenaventura, 1 (BYU 40048).
15.4 mi S Villa Matamoros, 2 (BYU 41777–8).
Sonora: 4 mi E Río Nutria, 1 (BYU 13491).
Coahuila: 15 mi SE Saltillo (Highway 57), 8 (BYU 36243–49, 36399).
New Mexico: Elephant Butte Lake, Sierra Co., 1 (BYU 30520).
Texas: Pine Canyon, Chisos Mts., Brewster Co., 1 (BYU 40376).
Intergrading populations, all in south central Chihuahua: 10 mi W San Francisco del Oro, 6 (BYU 15679–83, 15710); 1 mi NE San Pedro on Río Papigochic, 9 (BYU 15685–90, 17053–5); 20–27 mi NE San Juanito on road to La Junta, 4 (BYU 41081–4); 25.5 mi S Creel (La Bufa Road), 5 (BYU 17138–42); 62 mi W Chihuahua City, 5 (BYU 13861–5); San Pedro, 2 (BYU 14523, 15771); 50 mi W Chihuahua City, Highway 30, 14 (BYU 13812–25); 18 mi SW San Pedro, 1 (BYU 15475).

Except that *p. poinsettii* and *p. polylepis*, as presently known, are widely separated, one would find difficulty in devising a key to separate them. Smith and Chrapliwy (1958) based the distinction on small, more numerous dorsals and a smaller body size (S-V 96 mm). In northern Chihuahua and the United States populations of *poinsettii* have larger dorsals (32–36). It is not until populations in central Chihuahua are reached that the dorsals are reduced to 29–31, perhaps an indication that an influence of *p. macrolepis* is affecting the number of dorsals. The specimens from Chihuahua City and west in the Conchos and Papigochic basins are intermediate in the basic characters presently used. The series from 10 mi W of San Francisco del Oro have dorsals 28–31, lower than the average for the intergrade series (Table 1) but not yet to be included in the *p. macrolepis* series. A single specimen from 27 miles south of Parral is here listed as a *p. polylepis*. It does, however, have more femoral pores (25) than others from Durango (19–23) and may indicate a relationship to the population in central Chihuahua.

Sceloporus p. poinsettii is the most variable of the subspecies (Table 1). It is also the one with the greatest area of distribution. The series (17) from northwestern Chihuahua has more dorsals with 31–36 ($\bar{x}$ = 33.2) than those from the northern and eastern populations (13), with 30–36 ($\bar{x}$ = 31.85). Obviously, these series are too small to be considered reliable but do show trends in both characters listed in

TABLE 1. Dorsal scales and femoral pore variations in the subspecies of *Sceloporus poinsettii* Baird & Girard.

Subspecies	No.	Dorsals	Femoral pores		Distribution
poinsettii	30	30–36 (32.63)	16–25 (21.03)	20 or more 77%	New Mexico, Texas, Chihuahua, Coahuila
macrolepis	14	26–28 (27.85)	20–28 (23.80)	20 or more 100%	Durango and Zacatecas
polylepis	9	31–34 (33.22)	18–25 (21.37)	20 or more 78%	Chihuahua and Durango
robisoni	14	29–32 (30.42)	14–21 (18.64)	20 or more 85%	Chihuahua
Intergrades	43	30–33 (32.76)	18–28 (22.60)	20 or more 92%	Chihuahua

Table 1. In the northern population of Chihuahua, from the lower eastern foothills and valleys, nine specimens from west of Colonia Juárez (7,000–8,000 feet) have 33–36 ($\bar{x}$ = 34.4) dorsals, in contrast to the Durango mountainous populations (*p. macrolepis*). In these two mountain populations there is a difference of 7+ dorsals (*macrolepis* 27.85 [south] and *poinsettii* 34.44 [north]); this perhaps explains the intermediate (intergrading) populations in south central Chihuahua.

Sceloporus p. macrolepis Smith & Chrapliwy

Sceloporus p. macrolepis Smith and Chrapliwy, 1958, Herpetologica 13:267–271.
West of Ciudad Durango, 2 (BYU 41325, 41368).
4 mi W Ciudad Durango, 1 (BYU 40100).
East of Ciudad Durango, 1 (BYU 41327).
32.5 mi W Ciudad Durango, 4 (BYU 14533–5, 15376).
22 mi S Sombrerete, Zacatecas, 6 (BYU 13855–60), paratypes.
Belleza, 1(USNM 47417).
Guachochic, 6(USNM 13855–60).

Populations in southwestern Chihuahua are intergrades between *macrolepis* (south) and *poinsettii* (north). (See Table 1 and the discussion above). I did not see the specimens reported by Smith and Chrapliwy for Belleza and Guachochic, Chihuahua.

There are color and color pattern differences between the specimens from south of Sombrerete, Zacatecas, and those from near the type locality in western Durango. In *macrolepis* the eye is circled by a bright red, which is most noticeable in living specimens. Also, the cross banding is faint, and a rustic color predominates on the nape and back. Durango specimens are dark without the red around the eyes and with cream-colored bands across the body. In S-V length BYU 13857 (Zacatecas) = 117 mm and BYU 40100 (Durango) = 108 mm.

Sceloporus p. polylepis Smith & Chrapliwy

Sceloporus p. polylepis Smith and Chrapliwy 1958, Herpetologica, 13:267–271.
27 mi S Parral, Chihuahua, 1 (BYU 15652).
10 mi W Gómez Palacio, Durango, 3 (BYU 40064–6).
25 mi S Gómez Palacio, 1 (BYU 40115).
6 mi NE Pedriceno Highway 49, 3 (BYU 36236–8).
25 mi S Torreón Highway 49, 1 (BYU 36240).
140 mi S Torréon Highway 49, 1 (BYU 36241).

Specimens from near the type locality have dorsals 35–37; the one from Chihuahua 34 and the one 140 mi S Torreón only 30. Both are intergrades between *polylepis* and *macrolepis*, and in both cases the specimens are near the area of distribution for *macrolepis*. The data now available suggest that the subspecies *polylepis* is restricted to the low plains extending from southeastern Chihuahua to northeastern Durango. This distribution also suggests that it may occur in adjoining Coahuila.

The largest adults (40064, S Gómez Palacio and 36240, S Torreón) have S-V length of 82 and 83 mm. If these size data and those presented by Smith and Chrapliwy (1958) are representative of the populations of this subspecies, then it is indeed a small representative of the species.

Sceloporus poinsettii robisoni, subsp. n.

HOLOTYPE.—BYU Bean Mus. Nat. Hist. 14287, adult male, Cuiteco, Chihuahua, collected 19 July 1958, by W. W. Tanner and W. G. Robison.

PARATYPES.—BYU 14273–5, 14288–9 topotypes; BYU 14602, 15667–9, 15670, Cerocahui; BYU 17070–2, along road 4–8 mi SE Maguarichic.

DIAGNOSIS.—A southwestern Chihuahua subspecies of *poinsettii* with reduced femoral pores, 85% with 20 or less, compared to

TABLE 2. Variation in three head scale patterns.

Subspecies	No.	Nasal to lorilabials percent	Labiomentals to mental percent	Median scale anterior to interparietal percent	Adult size
poinsettii	17	west 90 east 44 71	12	100	82–120 mm
macrolepis	14	65	7	38	101–117 mm
polylepis	9	90	0	90	78–99 mm
robisoni	14	90	50	57	85–113 mm
Intergrades	59	85.5	20	90	85–115 mm

75–100% with 20 or more in other subspecies; dorsals low, 29–32; postmentals not in contact with infralabials; and adults large, 110–115 mm S-V.

DESCRIPTION OF TYPE.—A young adult male, S-V 88.5 mm, total length 175 mm, dorsals 29, ventrals 47, scale rows 37, femoral pores 7–7; head scalation much as in *S. p. poinsettii*, most patterns variable, two rows of supraoculars, lorilabials contact nasal on one side; labiomentals contact mental; postmentals not in contact with infralabials; anterior dorsals, two parietals, and four enlarged scales surround the interparietal.

Black collar 3 scales across medially, edged anteriorly by 2 scales of cream color and edged posteriorly by one light scale row, dorsum of body not distinctly barred; tail with 6 distinct rings; lateral belly blue patches edged medially with darker blue, sides of throat and chin suffused with light blue, separated medially by a lighter area.

VARIATION.—The subspecies of *Sceloporus poinsettii*, as noted in Table 1, are variable in the numbers of dorsal scales and femoral pores. Most noticeable is the consistently low number of pores of *robisoni*. Of the type series (14), only 2 specimens have a total of 21, 3 have 20, and 9 less than 20. In the dorsal head scales there is little uniformity, except that in all *poinsettii* subspecies the frontal is widely separated from interparietal, either by one or several small scales or by enlarged scales extending anterior from the parietals to the suture anterior to the interparietal. Table 2 summarizes the variation observed in three head scale patterns. Smith and Chrapliwy (1958) referred to the relationship of the labiomentals to the mental, frontal to interparietal, and size of adults. Aside from the fact that *macrolepis* has larger and fewer dorsals and *polylepis* has smaller and more dorsals than other subspecies or populations examined, the relationships illustrated in Table 2 indicate additional differences not presented in the original description. In *p. polylepis* the labiomentals do not contact the mental and in size the adults (5), except for one, were less than 90 mm in S-V. They are more slender and less robust than other subspecies. These data strongly suggest that *Sceloporus poinsettii* is undergoing differential environmental pressures from its desert to foothill to mountain habitats and thus may represent a rapidly evolving species.

Sceloporus jarrovii jarrovii Cope

Sceloporus jarrovii jarrovii Cope, 1875b, U.S. Geological and Geographical Surveys, W 100th Meridian 5:569.

Colonia García, 4 (BYU 2956, 1328–30).
25 mi from Colonia Juárez on road to Tres Ríos, 13 (BYU 15440–1, 15599–600, 15792, 15811, and 7 mature embryos 32578–84).
Black Canyon, west of Chuhuichupa, 11 (BYU 142767–82, 37632–35).
3 mi N Chuhuichupa, 21 (BYU 13903–7, 13935–6, 15413–14, 15416–23, 15469–72).
Meadow Valley, 2 (BYU 15716, 15743).
North end of Blues Mountain–Gavilancito Sawmill, 2 (BYU 13596 and 15709).
Río Chico, 3 (BYU 15754–6).
Cuesta el Toro, 5 mi S Gómez Farías, 2 (BYU 157894–5).
4 mi SE Creel, 12 (BYU 14520–21, 15587–96).
1 mi NE Bocoyna, 3 (BYU 15476–8).
Cerocahui, 12 (BYU 14597–601, 15474, 15645–7, 15671–3).
Cuiteco, 10 (BYU 14270–2, 14290–3, 15657–8, 15664).
10 mi SW San Juanito, 7 (BYU 15796–802).
1 mi W La Lanja, 4 (BYU 16873–6).
26 mi W San Juanito, 7 (BYU 16960–6).
22.5 mi S Creel (along La Bufa road), 4 (BYU 16947–50).
25.5 mi S Creel (along La Bufa road), 16 (BYU 17654–5, 17659, 17661–2, 17664, 17666, 17668–70, 17672–4, 17759, and 17021–2).
4–8 mi SE Maguarichic, 14 (BYU 17056–69).
16 mi NE San Juanito, 4 (BYU 17024–7).
20 mi SW Colonia Juárez, 2 (BYU 20973–4).
Carmen Bridge (La Bufa road), 1 (BYU 22719).
1 mi W Carmen Bridge, 4 (BYU 22668–71).
La Mesa de Arturo, 1 (BYU 22672).
Turkey tanks SW Colonia Juárez, 1 (BYU 41760).]

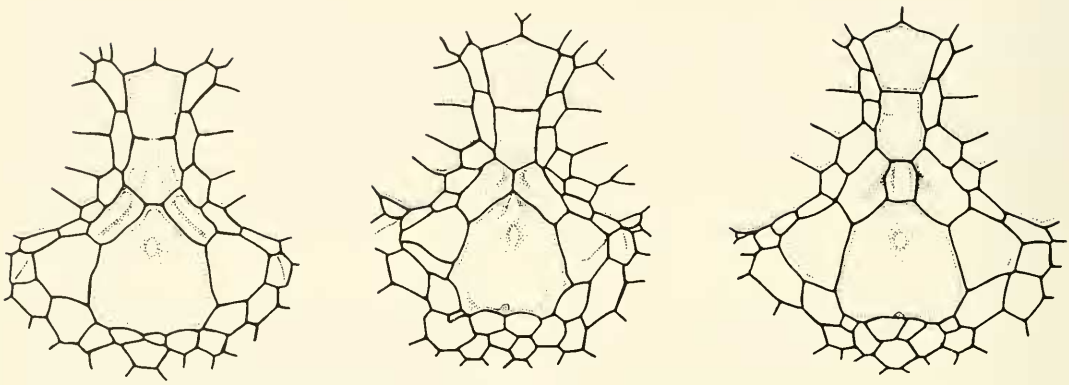

Fig. 4. Dorsal head scale variations in *Sceloporus j. jarrovii*. See text for explanations.

We found this species to be widespread in all suitable habitats throughout the western mountains. It was commonly seen in areas where rocky outcroppings occurred and on boulders strewn along roads. It is apparently replaced in the foothills and central valleys by *S. u. consobrinus* and *S. poinsettii*.

There is noticeable variation within some populations in the number of dorsal scales. This variation is reflected in samples from different basins; for example, in Cerocahui 12 specimens have 39–44 ($\bar{x}$ = 41.1), and specimens 7 to 10 mi SE San Juanito have 37–40 ($\bar{x}$ = 38.8). However, when all specimens from south of the Río Papigochic are included, the following data are obtained: 96 specimens 37–45 ($\bar{x}$ = 40.4). This is generally true for specimens north of the Río Papigochic in which 52 specimens range from 37–44 but average 41.2 scales in the dorsal series.

The femoral pores vary from 12 to 18 per femur and show population variation as in the dorsals but with the southern population tending to have higher numbers than those north of the Río Papigochic. The head scales are also variable. The relationship of the interparietal to the frontal, as an example, shows the following as illustrated in Figure 4. In A, 61 specimens or 41% are as illustrated; B, 34 specimens are 23%; and C, 53 specimens are 36%. Other dorsal head scales show some pattern variations but were not examined.

The labials varied little with the upper labials, 4–4 rarely 5, and the lower labials usually 6–6 but occasionally 5 or 7. In 51% of the total series the nasal was in narrow or broad contact with the anterior lorilabial. The most stable pattern was that of the sublabials, which do not contact the mental, thus permitting contact of the postmental and the first infralabial. In 148 specimens only 3 submentals contact the mental on one side.

Since collecting was done from May to October, the BYU series includes all age groups. On 28 June 1958, a gravid female, 75 mm S-V, was collected 25 mi W of Colonia Juárez. She contained 7 well-developed embryos, 4 females and 3 males, ranging in S-V length from 22 to 24 mm. All color and scalation patterns were fully developed. In the latter, the hemipenes were fully everted. At this locality on the same day, 3 young were collected and measured 25, 26.5, and 27 mm in S-V length. These data indicate that birth in the mountains occurs in middle to late June. On 5 July 1958, at Black Canyon, 8 mi W of Chuhuichupa, 4 young were collected. These measured 24.6, 28, 29, and 31 mm S-V. Four juveniles collected at Cuiteco on 28 July 1958 measured 42–44 mm in S-V.

Elevation may be a factor since specimens taken at about the same dates in 1957 and 1958 at Chuhuichupa and near Creel (8,000 feet) were smaller (35–37 mm S-V) than those taken at a lower elevation at Cuiteco. By October the year's young are 50–60 mm S-V.

Sceloporus slevini Smith

Sceloporus scalaris slevini Smith, 1937, Occ. Pap. Mus. Zool. Univ. Michigan 361:3–4.

Sceloporus scalaris Thomas and Dixon, 1976, Southwestern Nat. 20(4):523–536.

Madero Canyon (Tureze), 1 (BYU 1326).
Cerocahui, 3 (BYU 14603–4, 15489).
2 mi S Creel, 1 (BYU 15597).
3 mi N Chuhuichupa, 4 (BYU 13799, 15717–9).
Meadow Valley, 1 (BYU 15714).

12 mi SW Miñaca, 2 (BYU 15506, 15770).
6 mi S San Juanito, 1 (BYU 17096).

In Chihuahua this species is found only in the western mountains at elevations ranging from about 6,500 to 8,000 feet. Records from the lower central ranges and valleys, such as Chihuahua City or 30 mi S El Paso (Smith 1937), were not confirmed by our collecting in these areas. Their habitat of grassy, low-growing herbs and brush did not make for easy collecting and consequently large series were not taken.

All adults in this series varied in S-V length from 46 to 56 mm. The smallest is a male and the largest a female. Dorsals were 40–47 ($\bar{x}$ = 42.92), femoral pores 12–16 per femur or total pores 25–30 ($\bar{x}$ = 27.8). Other scale patterns were within those listed by Smith (1939). Color patterns showed some individual variation but were well within patterns previously established for the subspecies.

Except for one specimen, BYU 13799, taken on 27 August 1957, all were collected during July. Three of those from north of Chuhuichupa (2–6 July 1958), one from Cerocahui (BYU 15489, 13 July), and one from south of Creel (BYU 15597, 20 July) were gravid females. They ranged in size from 47 to 55 mm S-V and contained 4–7 eggs. The largest contained 7 eggs, and the smallest 4. The larger eggs in each individual measured 6–11 mm. All were heavily laden with yolk and the larger ones were compacted, except in the specimen with only 4 eggs, thus accounting for the round rather than elongated shape. The larger eggs were in specimens taken in late July.

We saw no hatchlings and suspect that eggs are laid in late July or early August. Hatchlings would seem to appear in late August or September.

Sceloporus nelsoni barrancorum Tanner & Robison

Sceloporus nelsoni coeruleus Tanner and Robison, 1959, Great Basin Nat. 19(4): 79–81.

Sceloporus nelsoni barrancorum Tanner and Robison, 1962, Herpetologica 16(2): 114.

Sceloporus nelsoni: Hardy and McDiarmid, 1969, Univ. Kansas Publ., Mus. Nat Hist. 18(3): 136–38.

Urique, 10 (BYU 14315–20 and 14322–5).
Teradakwa Creek near Río Urique, 1 (BYU 22721).
3 mi NE Temoris, 1 (KU 51795).
1.5 mi Tocuina, 14 (KU 47426–28, 51060–70).
23 mi S 1 1/2 mi E Creel, Barranca del Cobre, 1 (KU 44293).
6 km NE El Fuerte, Sinaloa, 7 (KU 78669–75).
16 km NNE Choix, Sinaloa, 9 (KU 73728).
9 mi SE Alamos, Sonora, 9 (KU 47537–45).
8 mi SE Alamos, Sonora, 4 (KU 49702–5, 91498, 176533).
Guirocoba (Sonora), 1 (MCZ 37855).
Río Mayo Guasaremos (Sonora), 1 (MCZ 43276).
Other material examined: Sinaloa: 32 mi SSE Culiacán (KU 37773), 1.5 mi E Santa Lucía (KU 44833–39), 1 mi E Santa Lucía (KU 44840–49), 12 mi N Culiacán (KU 4485), 1 mi SE Camino Real, Río Piaxtla (KU 63706–8), 44 km ENE Sinaloa (KU 69932), 6 km E Cosala (KU 73729), San Ignacio (KU 73730–32), 5 km SW El Palmito (KU 75582), 8 km N Carrizalejo (KU 78676–77), 5 km SW San Ignacio (KU 78678–79), 8 km N Villa Unión (KU 80731), 13 mi ESE Badiraguato (KU 83400), 5 mi E Presa Sanalona (KU 93479). *Sceloporus n. nelsoni*, type USNM 47676 and paratypes USMN 18979, 47271, 47273–5, 47629, 47690–1. Nayarit: 18 mi S Acaponeta (BYU 14383–4). Jalisco; 3 mi N Guadalajara (KU 27202–3).

Hardy and McDiarmid (1969) examined a series of 72 specimens, 56 from localities in Sinaloa and 16 from southwestern Chihuahua. They did not study specimens from the type locality nor from the type series reported by Tanner and Robison (1959). A reexamination of the data from the type series of *n. nelsoni* and *n. barrancorum* and an evaluation of the material now available from or near the type localities indicates that a further examination of the variations in these subspecies is justified.

In the original description of *S. n. barrancorum* some characters were not clearly defined. Therefore, it appears appropriate and necessary to diagnose and redescribe *S. n. barrancorum* and provide a key for the identification of the subspecies. This can now be done based on a larger series from both the northern and southern populations.

DIAGNOSIS.—*Sceloporus n. barrancorum* is smaller than *S. n. nelsoni*, S-V of 30 adults, male, 54–60.0 ($\bar{x}$ = 56.5 mm), female 50.5–55.0 ($\bar{x}$ = 52.6 mm) in contrast to specimens from near Santa Lucía and other areas near the type locality of *n. nelsoni* at Plomosas, Sinaloa; males, 58.0–68.2 ($\bar{x}$ = 62.84 mm) and females 56.1–59.1 ($\bar{x}$ = 57.25 mm); enlarged postanal scales present, color pattern in males with the ventral surface (gulars and belly) a deep blue, no white except a small white spot near each shoulder, dorsolateral stripes faint or absent, venter of adult females

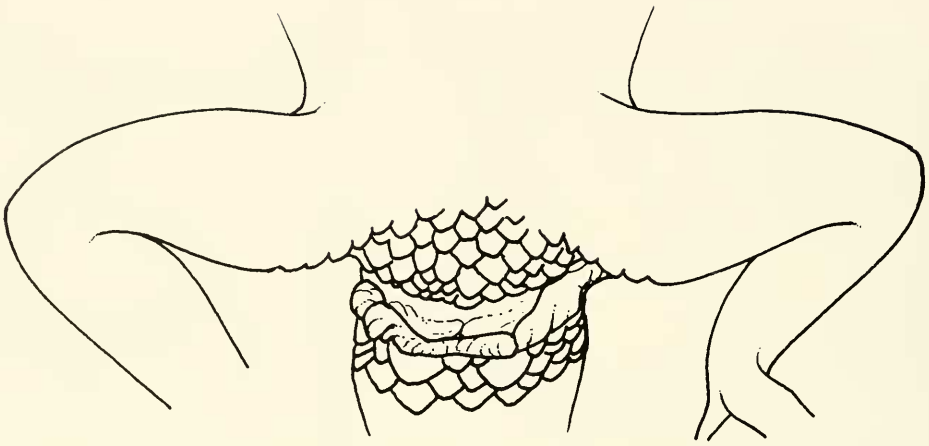

Fig. 5. Paratype of *Sceloporus n. barrancorum* (BYU 14317) showing the enlarged postanal scales.

with pale blue laterally and edged medially by a narrow stripe of dark blue, blue on belly in females separated by a narrow median light stripe, which is absent in males.

DESCRIPTION AND COMPARISON.—Some characters that seemed important previously are now, based on added material, obvious variations. The head scales do show variations but not consistent in any one pattern, and the lamellae of the fourth toe do not vary. Other characters such as adult size, color patterns, and enlarged postanal scales represent significant differences between *nelsoni* populations from southern Sinaloa and Nayarit and populations in northern Sinaloa, southern Sonora, and southwestern Chihuahua.

The description of *S. n. barrancorum* was based on the type series (10 specimens) and compared with the type series of *S. n. nelsoni* at the USNM and two specimens from 18 mi S Acaponeta, Nayarit. In the study by Tanner and Robison (1959) it is clearly stated that the northern populations (southwestern Chihuahua) were smaller than typical (type series) *nelsoni*. An examination of the data presented by Hardy and McDiarmid (1969) indicates that their analysis of size data included juvenile specimens. Such data are not representative of the actual adult size in a population. I have examined the 19 specimens seen by Hardy and McDiarmid (1969) from Villa Unión (KU 80731), El Palmito (KU 75582), and Santa Lucía (KU 44833–39 and KU 44840–49). My measurements of S-V of 14 adult males of this series range from 58.0 to 68.2 mm and average 62.84 mm, in contrast to their measurements, 42–65 ($\bar{x}$ = 58.0). Although Hardy and McDiarmid (1969:136) state that "the maximum snout-vent length is slightly smaller in Chihuahua and northern Sinaloa than in southern Sinaloa," they fail to corroborate this observation in their data (p. 137, Table 4). In small species, such as *nelsoni*, an increase of 4–5 mm in the S-V of adults substantially increases the body mass and is obvious by inspection. By eliminating juveniles and segregating males and females, a size differential between populations (subspecies) is evident.

The presence or absence of enlarged postanal scales was not considered in the Hardy-McDiarmid (1969) study. Cochran (1923:186) states that males have "slightly developed post-anal scales." Smith (1939:364), in the diagnosis of the species, states that there are "no enlarged postanals in males." In the type series of *S. n. barrancorum* all males (5) have enlarged postanals (Fig. 5). In the series from Santa Lucía, Sinaloa (KU 44833–44849), only one male has slightly enlarged postanals. I have not examined the type series of *nelsoni* for this character. Smith lists 38 specimens with all but 3 from localities near or south of Mazatlán in southern Sinaloa, Nayarit, and Jalisco. That he could not find enlarged postanals is not surprising, since this character apparently becomes more prominent in specimens at or north of Culiacán. Most adult males I have seen from northern Sinaloa (El Fuerte and Choix), southern

Fig. 6A. Four specimens of *Sceloporus n. nelsoni* from 18 mi S Acaponeta, Nayarit (BYU 14383), 1 mi E Santa Lucía (KU 44845), and San Ignacio, Sinaloa (KU 73730–31), depicting the basic ventral color pattern of the southern subspecies.

Sonora (near Alamos), and southwestern Chihuahua have the postanals enlarged.

Color patterns in the two subspecies are variable but distinct, with males of *S. n. barrancorum* having an intensive blue covering the entire venter from gulars to groin, and only small white spots medial to the shoulders (Fig. 6A). Males from southern Sinaloa have considerable white or cream coloring between the front legs and on the adjoining gulars. In some the blue belly patches are separated by a narrow mid-ventral light area not seen in males of the northern subspecies (Fig. 6B).

The dorsal color pattern for males of *S. n. barrancorum* is as follows: two faint dorsolateral stripes, with the area between heavily pigmented with dark bluish brown of approximately the same color as the area immediately lateral to the stripes. Females are less pigmented, the dorsal gray not contrasting with the gray below the dorsolateral lines.

In *S. n. nelsoni* there is less bluish green in the dorsal pattern. The dorsolateral lines are more distinct, and the dorsal area between the lines is a lighter brownish gray than the lateral area. As in the females of northern populations, there is less pigmentation, giving a gray pattern.

The following scale characteristics are based on the series of 17 specimens from near the type locality of *S. n. nelsoni* and contrasted with a series of *n. nelsoni* from near Mazatlán and the type series of *S. n. barrancorum* from Urique, Chihuahua. At or near the type locality of *n. nelsoni* the dorsals in the 14 male specimens range from 35 to 39 ($\bar{x}$ = 37.06). The series from near Mazatlán range from 36 to 40 ($\bar{x}$ = 37.89). The series from Urique range from 38 to 43 ($\bar{x}$ = 39.5). In the femoral pores in the same order the range is 31–39 ($\bar{x}$ = 33.82). The intermediate series is 29–40 ($\bar{x}$ = 34.10) and the Urique series 34–38 ($\bar{x}$ = 36.82). Other head scale characteristics show little modification between the southern and the northern series except that there is a noticeable variation in the size of the large scale immediately posterior to the inter-

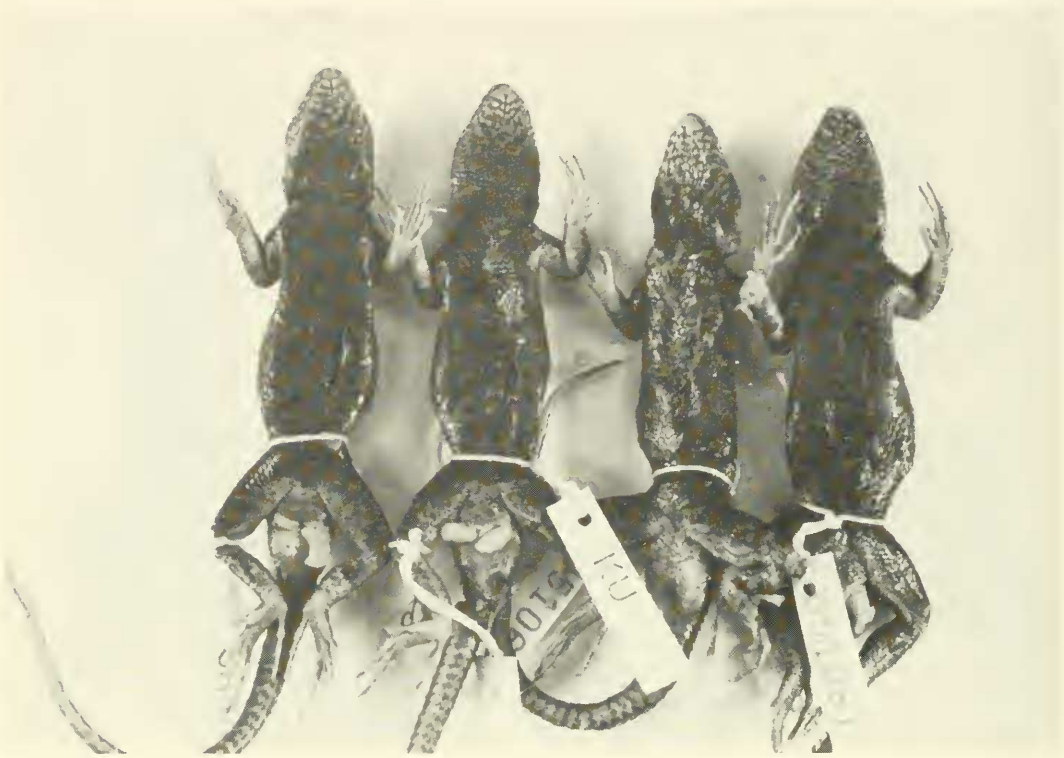

Fig. 6B. Four specimens of *Sceloporus n. barrancorum* (KU 51065, 51069, 51060, and 51067) from 1 1/2 mi SW Tocuina, Chihuahua, showing the dark (blue in life) venter from chin area to groin.

parietal. The figure in the original description of *S. n. barrancorum* (Tanner and Robison 1959, Fig. 2, original description *S. n. coeruleus*) depicts a scale much larger than the adjoining ones. This size differential is maintained in approximately 90% of the specimens designated above as *S. n. barrancorum*. In *S. n. nelsoni* this scale is reduced in size and in many specimens is the same size as or subequal to the surrounding scales. In these subspecies, as well as in other species where gradual intergrading of characters occurs, there are the expected clinal variations between the subspecies.

REMARKS.—Apparently the specimens referred to by Smith (1939) from Guirocoba, Sonora (MCZ 37855), and Río Mayo, Guasaremos, Sonora (MCZ 43276), and the specimen from Culiacán, cited by Cochran, were not seen by Hardy and McDiarmid (1969). The two Sonora specimens are identical in both scale and color pattern to the type series of *S. n. barrancorum*. That Smith (1939) did not consider the data based on three specimens (widely separated geographically) to be sufficient to establish or warrant subspecific recognition of the northern populations is not surprising. Only one of the three specimens (MCZ 37855, an adult male) would have provided the basic data for comparison with the southern populations of *nelsoni*.

Key to the Subspecies

1. Adult males with enlarged postanal scales; gulars and entire venter a deep blue (except for two small cream-colored spots near shoulders); adults smaller, males 54–60 mm, females 50–55 mm in S-V length ..... *S. n. barrancorum*

— Adult males usually without enlarged postanals; a large area of light (white to cream) color between front legs separating the blue of the gulars and the belly; adults larger, males 58–68, females 56–59 mm in S-V length ..... *S. n. nelsoni*

Genus *Urosaurus*

Urosaurus ornatus Baird & Girard

The *ornatus* complex in Chihuahua is not well represented by specimens, nor are the subspecies clearly defined. A lack of specimens has made it difficult to determine distribution parameters for the subspecies that

Fig. 6C. Type of *S. n. barrancorum* (BYU 14316), dorsal and ventral views.

have been reported for the state. Based on the material at hand, literature records, and the available keys (Smith and Taylor 1950), the following subspecies should occur in northern and central Chihuahua: *Urosaurus o. schmidti* Mittleman, *Urosaurus o. caeruleus* Smith, and *Urosaurus o. linearis* Baird. The latter may occur only in extreme northwestern Chihuahua. Specimens of *linearis* are not available, and its relationship to other subspecies (*caeruleus, schmidti,* and *schottii*) as well as its distribution must be established before it can be recognized. In southwestern Chihuahua, *Urosaurus bicarinatus tuberculatus* Schmidt occurs. Tanner and Robison (1959) examined the type of *Urosaurus unicus* Mittleman, type locality Batopilas, Chihuahua, and determined it to have the same basic characteristics as *Urosaurus b. tuberculatus*.

Mittleman (1940) described *Uta o. schmidti* and listed a specimen (MCZ 45589) from Colonia García, Chihuahua, as a paratype. While I am not questioning it as a representative of the subspecies, I doubt that it came from a mountain habitat such as García. In 1941 Mittleman placed *U. o. lateralis* as a synonym of *U. o. schottii* Baird. Hardy and McDiarmid (1969) recognized the subspecies *lateralis* as occurring in Sinaloa NNE of Choix, a locality near southwestern Chihuahua. Bogert and Oliver (1945), based on the study of Oliver (1943), recognized *U. o. lateralis*, rather than *U. o. schottii* Mittleman, as occurring in Sonora. Although I am unaware of specimens of the subspecies *U. o. lateralis* from southwestern Chihuahua, it undoubtedly occurs, as do many other species, as distributional extensions along the rivers of the Río Fuerte basin.

To fully understand the systematics of *Urosaurus ornata* and its subspecies would require a major study, which is beyond the scope of this study. The species and subspecies listed here are based on limited material from Chihuahua and, therefore, on my best judgment of the available specimens.

Urosaurus ornatus caeruleus Smith

Uta caerulea Smith, 1935, Univ. Kansas Sci. Bull. 22:172–178, pl. 26.

Urosaurus ornata caeruleus Mittleman, 1942, Bull. Mus. Comp. Zool., 19:136–137, pl. 9.
Colonia Dublán, 4 (BYU 1327, 2957, 3711–12).
18.5 mi E Ricardo Flores Magón, 2 (BYU 13403–4).
45 mi S Gallego (Highway 45), 1 (BYU 14157).
6.5 mi N 1.5 W Chihuahua City, 1 (BYU 15825).
La Cruz, 15 mi NNW Camargo, 1 (UTEP 3580).
24 mi (air) NNE Ascensión, 4 (UTEP 3563–6).
14 mi SE Janos, 1 (UTEP 4269).
6 mi NE Janos, 1 (UTEP 4270).
10 mi SSE Cd. Chihuahua, 1 (UTEP 4599).
16.3 mi (by Hwy 16) NE Aldama, Puerto de Gómez, 2 (UTEP 9212–13).

The characteristics of the above specimens are well within those established by Smith (1935). In adult males (S-V 42–50 mm) the entire venter is a vivid sky blue, with spots of blue on the base and lateral sides of the tail. In small or subadult males the blue is less intense and faded at the edges. The venter of females is without blue. Dorsal color pattern consists of seven irregular cross bars from nape to groin. The dorsal color is heavily pigmented between the bars, giving a melanistic appearance.

All of the scale patterns are within those set forth in the original description (Smith 1935). The ventrals, gular fold to anus are 57–68 ($\bar{x}$ = 61.7). Some scale patterns will be compared to other populations discussed below. In all but a few the head is slightly longer than wide, but less so than in two specimens of *schmidti;* extremes are: length 9.4 to width 7.5 and 9.6 to 9.8 mm. Other specimens range between these extremes. Femoral pores range from 9 to 13 and total 18 to 27 per individual. Two of the specimens are hatchlings with a snout-vent of 20.5 mm (BYU 14157) and 24.5 mm (BYU 15825). They were collected 13 August 1957 and 28 July 1958.

Urosaurus ornatus schmidti (Mittleman)

Uta ornatus schmidti Mittleman, 1940, Herpetologica 2(2):33–34.
Urosaurus ornatus schmidti Mittleman, 1942, Bull. Mus. Comp. Zool. 91:135–136.

The recognition of this subspecies is based entirely on the specimen (DHD and HMS No. 72) reported by Smith (1935) from 3 mi S of Samalayuca, Chihuahua, and two specimens (UTEP 3362–3) from 7 mi NW of Indian Hot Springs, Texas, presumably across the Río Grande in northern Chihuahua. In our limited collecting south of Ciudad Juárez to Villa Ahumada we did not see a *Urosaurus*. Both UTEP specimens are females with the following characters: ventrals 64, 64; femoral pores 13–13 in both and with S-V length 41 and 48.2 mm, respectively. The color is light gray to cream on both the dorsal and ventral surfaces, with little spotting dorsally and immaculate ventrally; large preshoulder blotches present in *U. o. caerulea* are represented in *schmidti* only as a small dark spot; enlarged dorsals variable in size but equal or subequal to prefemoral or pretibial scales. Head longer than wide, 9.8 to 8.4 and 9.2 to 7.6 mm, respectively. Enlarged dorsals begin at shoulders and extend to base of tail.

Urosaurus ornatus schottii (Baird)

Uta schottii Baird, 1858, Proc. Acad. Nat. Sci. Philadelphia 10:253.
Urosaurus ornatus schottii Mittleman, 1942, Bull. Mus. Comp. Zool. 91:137–139.
Río Bavispe below Tres Ríos near Chihuahua-Sonora state line, 21 (BYU 13427–8, 13430, 13436–8, 13453, 13461, 13466–8, 13471, 13473, 13503, 13507, 13595, 14559–62, 14565–6).

Although there is some doubt as to the exactness of the type locality, if we assume, as have others (Mittleman 1942, Smith and Taylor 1950), that it is in north and central Sonora, then the vicinity of Magdalena may represent the most logical area. Past studies of this species in Sonora (Mittleman 1942, Oliver 1943, Smith and Taylor 1950) have not agreed as to which subspecies of *ornata* occur in Sonora or Chihuahua nor as to their present distribution. Bogert and Oliver (1945) list *U. o. lateralis* for the entire state of Sonora. Smith and Taylor (1950) do the same for *U. o. schottii* and exclude *lateralis*. It may be that both occur, one in the north (*schottii*) and one in the south (*lateralis*), with the latter extending into Sinaloa (see Hardy and McDiarmid 1969).

In attempting to allocate the Río Bavispe specimens, we compared them with a few specimens from the following localities in Sonora: 12 mi NW Altar, Kino Bay, 23 mi N Kino Bay, 10 mi N Guaymas and Ortiz.

Although there is variation in these and the Río Bavispe series, all were well within the basic characteristics, as I understand them, for *U. o. schottii*. The following characters were noted: two rows of enlarged dorsals commencing on the nape and separated by a series of small middorsal scales. Each row of enlarged dorsals consists of two rows of enlarged

scales of equal or subequal size. In most specimens the outer rows were smaller but this was not a consistent character.

In most specimens (80%) the enlarged dorsal scales extend onto the posterior part of the nape. In this there is variation ranging from the angle of the shoulder to approximately halfway to the parietal area. The small middorsal scales are irregular in size and are usually two (not more than three) in number across the median. They extend beyond the base of the tail for 3 to 10 of the enlarged dorsal tail scales.

Males have blue belly patches, which in some are divided medially by a light stripe. Most adults are a solid blue from axilla to groin, with little or no blue between the front and hind legs. Females possess faint blue ventral patches or are without them.

Gulars are faint blue in the middle only, not extending to labials. The area of the gular fold is spotted and without blue. This is in contrast to *caeruleus*. Scales on the forearm are equal to but usually not larger than those of enlarged dorsals.

Usually a distinct dark collar extends from in front of the shoulder to or nearly to the enlarged dorsals. A series of 4 or 5 dark, irregular blotches occur from nape to base of tail and usually involve the dorsolateral row of enlarged tubercles. This pattern is in contrast to 6–7 blotches in *caeruleus*.

The measurement ratios of head width to length were too variable to be useful. The head length average for 20 Río Bavispe specimens is 9.5 and width 8.6; two of the 20 had heads wider than long (9.4 - 9.9 and 8.5 - 9.1). In others the length was 0.5 to 1.0 mm longer than wide. The S-V measures were 41–49 mm in the Río Bavispe series and for northern and western Sonora 40–50 mm.

Specimens of *U. ornata* are not available from southwestern Chihuahua. Yet, there is every reason to suspect their presence in the lower Urique basin north of Choix, Sinaloa. The subspecies *U. o. lateralis* would be expected to occur since it is in southeastern Sonora and northeastern Sinaloa. A specimen (BYU 36824) from 15 km ENE of Navojoa, Sonora, has the basic characteristics as presented by Oliver (1943), only one row of enlarged dorsals on each side of the small middorsals; enlarged dorsals extending nearly to parietals; scales on forearm smaller than enlarged dorsals. It is an adult male and quite distinct from the more northern specimens of *ornata*.

Urosaurus bicarinatus tuberculatus (Schmidt)

Uta tuberculatus Schmidt, 1921, Amer. Mus. Nov. 22:4.
Urosaurus bicarinatus tuberculatus Mittleman, 1942, Bull. Mus. Comp. Zool. 91:169–170.
Urique, 1 (BYU 14321).
Near Pitahaya, 1 (BYU 22681).

Two other specimens have been examined: KU 47401 from La Bufa and USNM 14248 from Batopilas. The latter is the type of *Urosaurus unicus* Mittleman and was compared to the Chihuahua specimen from Urique and nearby Sinaloa specimens by Tanner and Robison (1959). Oliver (1943) questioned the validity of *U. unicus*, and Hardy and McDiarmid (1969) agreed that it was at best a variant of *U. b. tuberculatus*. My examination of the *unicus* type provided no characters that were not well within the variable parameters of the subspecies *U. b. tuberculatus*.

The extent of the distribution of *tuberculatus* in Chihuahua is as yet unknown. It does occur in the lower portions of Río Urique and Río San Miguel.

Genus *Uta*

Uta stansburiana stejnegeri Schmidt

Uta stansburiana stejnegeri Schmidt, 1921, Amer. Mus. Nov. 15:1–2.
36 mi S Ciudad Juárez, 1 (BYU 15192).
6 mi N Chihuahua City, 1 (BYU 15815).

In all of our collecting we did not find this species to be common in Chihuahua. Between Silver City and Deming, New Mexico, utas were seen regularly, but they seem to be replaced in the desert flats of northern and central Chihuahua by the earless lizard *Holbrookia maculata*. In spite of extensive collecting in the greater Casas Grandes area, we did not see a *Uta*, although *Holbrookia* was abundant.

There is reason to believe that the distribution of *Uta* is primarily in eastern Chihuahua, that is, east of Highway 45 and extending east into Coahuila and south through the more desert areas to eastern Durango. The scarcity of utas from Chihuahua is also suggested by Ballinger and Tinkle (1972), who did not list a

single specimen from the state (see Ballinger and Tinkle, Fig. 1 and p. 40, material examined), and yet their distribution map (Fig. 5) includes most of Chihuahua. Smith, Williams, and Moll (1963) list 37 specimens taken along the Río Conchos between Julimes and northeast to Alamo. Smith and Taylor (1950) list a single locality, 15 mi S of Ciudad Juárez. The distribution of this species in Chihuahua and its distributional relationship to *Holbrookia maculata* are yet to be determined.

Family Scincidae

Genus *Eumeces*

Smith and Taylor (1950:219) list four species of *Eumeces* as occurring in the Mexican state of Chihuahua (*callicephalus*, *multivirgatus*, *obsoletus*, and *parviauriculatus*). Zweifel (1954) included *brevirostris* and Anderson (1962) added *brevilineatus*. Tanner (1957) examined the USNM 30833 specimen, which was listed by Smith and Taylor (1950) as a questionable representative of the species *multivirgatus*, and, with this one and two additional specimens, named the Chihuahua specimens *E. multilineatus*. A collection of skinks from Durango and Chihuahua examined by Tanner (1958) resulted in the description of *E. brevirostris bilineatus*.

The occurrence of the species *lynxe* in the western mountains of Durango and *humilis* and *parvulus* in the eastern foothills of Sinaloa suggests, on the basis of the many species that have recently been taken in similar habitats in southwestern Chihuahua, that additional species may occur in the state when adequate collecting is done in the rough terrain of southern Chihuahua. My experience indicates that skinks tend to be gregarious. In two similar and nearby habitats, one may have skinks and the other may not. Thus, collecting must be intense and complete. This type of collecting is far from true for much of southwestern Chihuahua and apparently also for the rugged mountains and foothills of eastern Sinaloa and northern Durango.

Eumeces tetragrammus brevilineatus (Cope)

Eumeces tetragrammus brevilineatus (Cope), 1880, U.S. Nat. Mus. Bull. 17:18–19, 44, 46; Taylor, 1935, Univ. Kansas Sci. Bull. 23:283–290; Anderson, 1962, Herpetologica 18(1):56–57; Lieb, 1985, Contributions in Sci., Nat. Hist. Mus. Los Angeles County 357:1–19.

5 mi N Cerro Campana, Sierra del Nido, 2 (MVZ 70702–3).

Lieb (1985) lists specimens for: Santa Clara Canyon, 4.5 mi E Mx Highway 45 (LACM 11640), Sierra del Nido, 4.7 mi W Encinillas (UTEP 62). Anderson (1962) reported that this range extends into the Sierra del Nido of Chihuahua. Although this species may not have been expected by Anderson, its occurrence is not a complete surprise considering the pockets of other species now known to have extended their distribution from the north and east into Chihuahua. The presence of *Phrynosoma douglassii*, *Thamnophis elegans*, *Thamnophis sirtalis*, and *Opheodrys vernalis* are examples of species whose distribution apparently was present in this area before, during, or immediately after the recent ice age. The following desiccation resulted in dispersing those species requiring a more mesic habitat from the low desert valleys into the foothill and mountain habitats. Disjunct distribution and isolated pockets have resulted. A careful examination of the above species would show, as has *Opheodrys vernalis*, the disruption of a once widespread and certainly a more uniform distribution than is presently known (Conant 1974).

Eumeces callicephalus (Bocourt)

Eumeces callicephalus (Bocourt), 1879, Miss. Sci. Mexique et Centr. Amer. 6:431–433; Taylor, 1935, Univ. Kansas Sci. Bull. 23:290–298.

Eumeces tetragrammus callicephalus Lieb, 1985, Contributions in Sci., Nat. Hist. Mus. Los Angeles County 357:1–19.

Río Bavispe at or near Chihuahua-Sonora line below Tres Ríos, 7 (BYU 13145–50 and 14233).

2 mi E Cerocahui, 3 (BYU 14248–50).

Cuiteco, approx. 1 mi NW in steep rocky canyon, 11 (BYU 14259–61, 14608–14615).

3 mi W of Carmen Bridge (across Río Urique), 1 (BYU 22689).

Along trail just west of canyon rim west of Urique, 1 (BYU 14338).

Taylor (1935) lists one from Madera (MCZ).

Lieb (1985) lists the following additional specimens: Guasaremos (MCZ 43389–90), 8 mi W Matachic (AMNH 68295), Pacheco (MVZ 46672), and 3 mi NE Temoris (KU 51462).

Because *Eumeces callicephalus* exhibits several distinct characteristics, it is deemed justifiable to retain it as a species rather than a subspecies of the *tetragrammus* group. It is understood that a close relationship exists be-

tween *callicephalus* and *brevilineatus-tetragrammus;* however, they both seem to be evolving with several distinct characters. Salient characteristics of *callicephalus* reported by Lieb (1985) include: a divided postmental scale, postnasal scale present on one or both sides, one or both primary temporals contact parietal, a single postlabial on one or both sides, interparietal enclosed by parietals and a wide separation in distribution (Lieb 1985, Fig. 4). *Eumeces callicephalus* has its entire distribution west of the Continental Divide, whereas *brevilineatus-tetragrammus* group is primarily found in the Sierra Madre Oriental of Mexico, southwestern Texas, and the desert ranges extending west to the isolated population in the Sierra del Nido of Chihuahua.

The distribution of *E. callicephalus* is difficult to explain. All specimens so far collected were taken west of the Continental Divide (except the specimen taken at Pacheco (Lieb 1985), and yet the habitat on the east side in some areas appears ideal. Why the east slopes of the mountains are not occupied is an enigma. If *brevilineatus* is established in the Sierra del Nido, why not in the Sierra Madre, a relatively short distance to the west when compared to the much greater distance to suitable habitat in Coahuila to the east?

The terrain extending west from the Sierra del Nido consists of low mountain ranges which interconnect and provide, in my opinion, a suitable distribution lane for either species. The fact that neither apparently did suggests that these populations, even though closely related, have been separated for a long time and, since both have continued to occupy similar habitats, have retained relating characters. Our attempt to understand the morphological and distributional changes that have occurred and may yet be occurring in the species of this area as a result of the desiccation following the recent ice age is still a major challenge.

The elevational distribution of *callicephalus* may range to at least 2,000 m. The specimen taken just west of the rim above Urique was at about 7,500–8,000 feet in a habitat of oak-madroño-pine with open spaces of rocky outcroppings. Lieb (1985) lists the range to be 900–1,700 m. We found this species to inhabit the canyon of the Río Bavispe and its tributaries (Nutria Creek) of western Chihuahua and eastern Sonora. It did not occur in the higher elevations north of the Río Papigochic where we found *E. multilineatus.* South of the Papigochic and west of San Juanito (Maguarichic and Mojarachic) in the higher elevations, *E. brevirostris* and *E. parviauriculatus* occur. It is south of Creel on the west rim of the Río Urique that we found *callicephalus* in areas at or above 1,700 m. Lieb (1985:8) indicates by map that *E. callicephalus* is found in the mountainous headwaters of the Río Oteros. As noted above, we found only *E. brevirostris* and *E. parviauriculatus*, and suspect *E. callicephalus* to be at lower elevations near the Sonora border.

TABLE 3. The percentages and frequencies of the following characteristics as observed in 25 specimens of *Eumeces t. callicephalus* from western Chihuahua, Mexico.

Characteristics	Percent/number
Postmental divided	100/25
Postnasals present	75/19
Interparietal enclosed	80/20
Primary temporal contacts parietal one or both sides	40/10
Postlabials single one or both sides	100/25
Nuchal Y-mark present	100/25
Scale rows 28	56/14
Scale rows 26	44/11
Dorsal scales parietals to base of tail	54–60 (56.25)

During 13–18 July 1958, 10 hatchlings, 8 at Cuiteco, 1 east of Cerocahui, and 1 near the west rim of Urique Canyon, were collected. Those west of Cuiteco were recently hatched. A nest of four young, still with the female, were taken from a nest between two large rocks. This nest was on the northeast side of the canyon and in partial shade for part of the day. Four young of another nest were found under a rock about six feet away, but in the same rocky area. They measured 22.8–25.4 mm snout to vent. Those hatchlings taken east of Cerocahui and on the canyon rim were also of this same size. On 26 September 1963 a juvenile was taken below the Carmen bridge near the Río Urique (BYU 22689). It measured 38.0 mm snout to vent.

An analysis of the characteristics of the 25 specimens collected in Chihuahua is summarized in Table 3. Several characters in this

series are not consistent with previous studies (Taylor 1935, Lieb 1985). The most notable variation is that of the contact between the primary temporal and the parietal, in which only 40% are sutured. There is a reduction in the percentage of individuals having 28 scale rows around the body. Two adult females each have 26 rows; of the 8 hatchlings collected with them, 3 have 28 and 5 have 26 rows. In the other 15 specimens, only 3 have 26 rows.

I could not discern more than one postlabial, although there are small scales near and above its posterior end and near the ear openings. The postnasals vary in size, which suggests that they represent a portion of the posterior part of the nasal. The size of the anterior loreal does not seem to vary when postnasals are present, but the posterior part of the nasal is noticeably reduced in size when a postnasal is present. The three characters most typical and consistent in the Chihuahua series are: (a) a divided postmental, (b) a nuchal Y-mark, and (c) complete lateral and dorsolateral light stripes.

Eumeces obsoletus (Baird & Girard)

Plestiodon obsoletum Baird and Girard, 1852a, Proc. Acad. Nat. Sci. Philadelphia 6:129 (type locality, Valley of the Río San Pedro, tributary of the Río Grande del Norte, Texas).

Eumeces obsoletus: Cope, 1875, Bull. U.S. Nat. Mus. 1:45.

Taylor (1935) lists a specimen (USNM 1) for the "City of Chihuahua." Whether this refers to Chihuahua City is not clear. We spent considerable time collecting in the vicinity of Chihuahua City and west to Cuauhtémoc, also in the grassy foothills between Casas Grandes and Colonia Juárez without seeing this species. At the present writing, I am aware of only one other specimen collected in Chihuahua, reported by Legler and Webb (1960) from Guadalupe Victoria (approx. 50 mi SE of Chihuahua City), KU 44261. In view of the record reported above and since they do occur in the Big Bend area of southwestern Texas and in southern New Mexico, their range in Chihuahua may include suitable habitat in the desert areas of eastern Chihuahua.

Eumeces multilineatus Tanner

Eumeces multilineatus Tanner, 1957, Great Basin Nat. 17:111–117.

Eumeces multiuirgatus mexicanus: Anderson and Wilhoft, 1959:57.

Eumeces multilineatus: Legler and Webb, 1960:18.

García, 1 (BYU 11984).

3 mi N Chuhuichupa, 8 (BYU 13798, 14226–14232).

Yaguirachic, 11 (MVZ 66056–66065).

15 mi S 5 mi E Creel, 1 (KU 44261).

Chihuahua (no locality), 1 (USNM 30833).

The distribution of *E. multilineatus* is at present confined to the higher mountains north and south of the Río Papigochic. I am not familiar with the habitat at Yaguirachic, but from the description of Anderson and Wilhoft (1959), it seems similar to that at García as described in the field notes of Dr. D Elden Beck (1931). Those taken north of Chuhuichupa were on the brow of a steep, rocky slope above the river and just below a grove of pine. We collected seven on 4 July 1958 from the same area, all from under rocks rather than fallen logs near a meadow as reported by Anderson and Wilhoft (1959).

Legler and Webb (1960) reported a specimen taken 15 mi S and 6 mi E Creel (7,300 feet) but did not indicate the type of habitat. The area south of Creel ranges in elevation between 7,000 and 8,000 feet and is habitat comparable to areas north of the Río Papigochic.

The original description of *Eumeces multilineatus* was prepared from two authentic specimens, one from Chuhuichupa and one from García, plus a faded specimen USNM 30833. Since this description, two additional populations have been added to the distribution of the species, one from Yaguirachic and one from SE of Creel. Although there is little, if any, variation in the color pattern of the populations, there does appear to be variation in some of the scale patterns, particularly in the number of scale rows and dorsals. The eight specimens from Chuhuichupa are uniform in having 24 scale rows around the midbody, those from Yaguirachic are 24 except for one with 25, and the one from south of Creel has 25. The dorsals vary from 52 to 59 (55.5).

The supralabials are consistently 7–7, as are the infralabials at 6–6. There are no postnasals, and in none of the specimens listed above is the interparietal enclosed posteriorly by the parietals. The nuchals are 2–2. Perhaps the most noticeable characteristic in the three populations is the uniformity of the color pattern. The consistency of most of the above scale characters and the uniform color

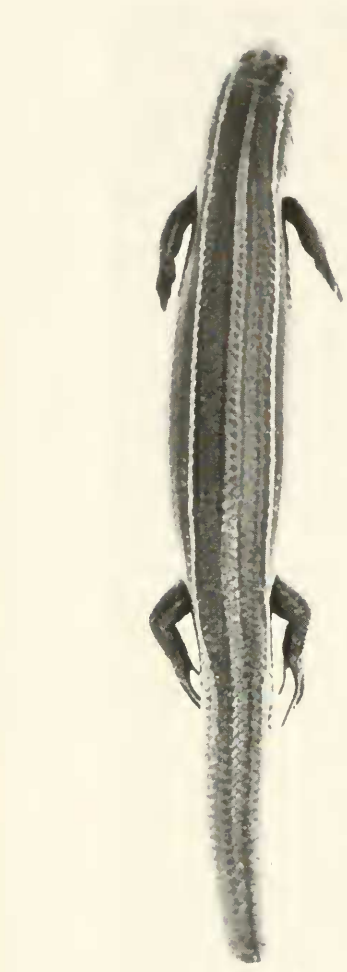

Fig. 7. Dorsal view of the type of *Eumeces multilineatus* (BYU 13798) from 3 mi N Chuhuichupa, Chihuahua.

pattern in contrast to *multivirgatus* are perhaps some of the most significant factors in the establishment of *multilineatus* as a valid species (Fig. 7).

Eumeces multivirgatus Hallowell

Eumeces multivirgatum Hallowell, 1857. Proc. Acad. Nat. Sci. Philadelphia 9:215.
Eumeces multivirgatus mexicanus: Anderson and Wilhoft 1959:57.
Eumeces multivirgatus: Legler and Webb 1960:18.
23 mi S 1.5 mi E Creel, 1 (KU 44260).

Legler and Webb (1960) reported a juvenile specimen taken 23 mi S and 1.5 mi E of Creel. My examination reveals the following characters: 26 scale rows at midbody, 56 dorsals, 1–1 postnasals, 2–3 nuchals, interparietal enclosed by enlarged parietals, a small scale separating postlabial from ear lobules, and a color pattern quite unlike any *E. multilineatus*, but similar in basic pattern to *multivirgatus* seen from Arizona, New Mexico, and Utah.

The color pattern as observed and described by Legler and Webb (1960) implies a relationship to the variations known to occur in *multivirgatus*. In none of the 20 specimens of *multilineatus* examined by me do such color pattern variations occur, but rather a consistently uniform series of scale and color patterns. The following characters are distinctly different from those seen in *multilineatus* and similar to those commonly observed in *multivirgatus:* postnasals usually present, 56–61 rows of dorsals (specimens from Arizona, Colorado, and Utah), interparietal often enclosed posteriorly by parietals, 1 or 2 small scales between postlabials and ear lobules, and a faded variable color pattern.

The Legler and Webb specimen is a recent hatchling and may not exhibit the adult color pattern. In *multilineatus* the color pattern does not seem to vary from hatchling to adult. The scale and color pattern characters do relate this specimen to *multivirgatus*. At present its precise taxonomic status must await additional specimens.

Eumeces parviauriculatus Taylor

Eumeces parviauriculatus Taylor, 1933, Proc. Biol. Soc. Washington 46:178–81; Robinson 1979, Contributions in Sci., Nat. Hist. Mus. Los Angeles County 319:7–9.
2 mi N Maguarichic, 4 (BYU 16849–52).

Robinson (1979) provides a distribution map and reports the following collection localities for this species: 4.8 km NE Temoris (KU 51463–64); La Pulvosa (UMMZ 114502); Mojarachic (FMNH 106476).

Taylor (1933) described this species from a single specimen (USNM 56903) and reported with Knobloch (1940) two additional specimens (KU 18983–4) from the Sierra Madre of Chihuahua. A definite locality was not listed, but I was advised by Dr. Knobloch that these specimens were collected in the vicinity of Mojarachic.

Six of the seven known specimens were found in mountains near the headwaters of the Río Oteros at an elevation above 8,000 feet. This may bring into question the type locality at Alamos, Sonora. Since Goldman undoubt-

edly collected the other reported species while traveling and then reported from a base camp, it is not likely that Alamos, at 1,200 feet, is the type locality. Goldman (1951) visited the Sierra de Choix (a southwest descending range of the Sierra Madre) northeast of Alamos at elevations of 5,000–6,000 feet. I believe that *E. parviauriculatus* is a mountain inhabitant and is not to be found in the low coastal or foothill valleys much below 5,000 feet. This distribution is also suggested by Robinson (1979). The Maguarichic specimens consist of one adult female with a snout-vent length of 53 mm and three hatchlings ranging from 23 to 26 mm. They were collected together on 15 July 1960. All were in a small burrow beneath two rocks on a southwest slope. The habitat consisted of open, rocky spaces between scattered, low-growing oak and other shrubs. To the west and south was the deep barranca of the Río Oteros. This is the third species of which we collected hatchlings during July (*callicephalus*, 13–18 July 1958; *multilineatus*, 4 July 1958 and *parviauriculatus*, 15 July 1950).

Except that the adult is larger, no other characters vary. In fact, all four are essentially duplicates when compared to the description and drawings of the type. The color pattern is basically the same but is not discolored, showing the dorsolateral stripes a light cream to white and extending from snout onto tail. A lateral stripe is present from labials to front leg. The area between the dorsolateral stripes is a mottling of grayish green, contrasting sharply with the dark brown below the dorsolateral stripes. The venter grades from light to dark gray between the legs, and the gulars are a cream color.

Eumeces brevirostris bilineatus Tanner

Eumeces brevirostris bilineatus Tanner, 1958, Great Basin Nat. 18(2):57–62 (type locality, approximately 10 mi SW El Salto, Durango, Mexico); Dixon, 1969, Contributions in Sci., Nat. Hist. Mus. Los Angeles County 168:1–30; Robinson, 1979, Contributions in Sci., Nat. Hist. Mus. Los Angeles County 319:1–13.

1 mi W La Laja (approximately 6 mi SE Mojarachic), 1 (BYU 16853).

Zweifel (1954) reports two hatchlings (7 mi SW Lagunita, MVZ 59138, and 3 mi N Río Verde, MVZ 59139) taken 30 June and 3 July 1953. Dixon (1969) lists the following localities: Mojarachic (UMMZ 117756); 15 mi S, 6 mi E Creel (KU 44262–63); 2 mi W Samachique (KU 47429, 51324–25); 7 mi SE El Vergel (MVZ-1).

The reviews by Dixon (1969) and Robinson (1979) not only provide a summation of the characteristics of this subspecies but also establish relationships that were not possible for lack of specimen material in previous studies (Taylor 1935, Tanner 1958). Furthermore, areas of distribution have been generally established for the subspecies of *E. brevirostris* and those species related to this group.

A review of my field notes indicates that there were few if any differences in the habitats in which the specimens of *E. b. bilineatus* and *E. parviauriculatus* were found. Both were taken in open areas on a southwest slope in rocky terrain and at approximately the same elevation. Robinson (1979:5, Fig. 2) also cited this sympatric distribution. If one accepts as valid the distribution map of *E. callicephalus* (Lieb 1985), then three species (*callicephalus*, *brevirostris*, and *parviauriculatus*) are sympatric in the Maguarichic-Mojarachic region of southwestern Chihuahua (see Lieb 1985).

Family Teidae

Genus *Cnemidophorus*

In Chihuahua, members of this genus are abundant and during the daytime are one of the more conspicuous lizards in the state. Only the genus *Sceloporus* appears to be more widespread and abundant. Within Chihuahua there are seven species of the genus *Cnemidophorus* as listed below. In addition, *C. neomexicanus* may occur in the north central area (Maslin and Secoy 1986:21), *C. burti stictogrammus* approaches or enters Chihuahua from northeastern Sonora or southeastern Arizona, and *C. g. septemvittatus* is reported for the northeastern corner (Duellman and Zweifel 1962, Maslin and Secoy 1986). Axtell (1961) reviewed the status of *C. inornatus* and described the population in northwestern Coahuila and northeastern Chihuahua as a new subspecies, *C. i. heptagrammus*.

The synonymies of the various species and subspecies reported for Chihuahua are long and have been a source of confusion for many years. During two decades (1950 to 1970) much of the taxonomic confusion that previously clouded our understanding of the sys-

tematic and taxonomic relationship of the species of *Cnemidophorus* in northern Chihuahua and the adjoining states has been largely resolved. Only a better understanding of distribution, life history, and ecological relationships apparently remains.

The discovery of all-female species in the areas of south central United States (primarily Arizona, New Mexico, and Texas) and north central Mexico (Sonora, Chihuahua, and Coahuila) led to an intensive study of the genus in the above and adjoining areas (Lowe and Zweifel 1952, Lowe 1956, Maslin, Beidleman, and Lowe 1958, Maslin 1962, Smith, Williams, and Moll 1963, Zweifel 1965, Wright and Lowe 1965, Axtell 1966, Lowe and Wright 1966, Wright and Lowe 1967, Williams 1968, Walker 1981, and others). At present, three parthenogenetic species are known to occur in northern Chihuahua (*exsanguis*, *uniparens*, and *tesselatus*) and perhaps a fourth if the range of *neomexicanus* extends across the border from New Mexico as indicated by Maslin and Secoy (1986). Vance (1978) also plots (map, Fig. 6) *neomexicanus* reaching to the northern border of Chihuahua.

It is now obvious that the phenotypic characters were not adequate to provide a complete understanding of the systematics of the various sympatric populations. The studies of Lowe and Wright, particularly their "Evolution of Parthenogenetic Species of *Cnemidophorus*—1966," brought into focus the genetic foundations which served to clarify the parental background of the unisexual species. A better understanding of this genus in Chihuahua must wait for an in-depth investigation of its species, particularly in the central and northern areas of the state.

In recent studies by Cole (1985), Walker (1986), and others cited by them, the taxonomic problems associated with the unisexual (parthenogenetic) entities in the genus *Cnemidophorus* are discussed. Inasmuch as there are basic unresolved judgments concerning the proper system of names to be applied to these populations, I have retained them as species, recognizing their yet undetermined taxonomic status. In this study their distribution in Chihuahua is the main reason for citing them.

The recent publication "A Checklist of the Lizard Genus *Cnemidophorus* (Teidae)," by the late T. Paul Maslin and Diane M. Secoy (1986), provides a complete listing of the species and subspecies of the genus as well as synonymies, holotype and type localities, general range designations, and useful remarks. This study will undoubtedly serve as a starting point for future studies of this widespread and diverse American genus.

Cnemidophorus costatus barrancorum Zweifel

Cnemidophorus costatus barrancorum Zweifel, 1959, Bull. Amer. Mus. Nat. Hist. 117:57–116; Duellman and Zweifel, 1962, Bull. Amer. Mus. Nat. Hist. 123:157–210.
Urique, 6 (BYU 14326, 14328–32).
10 mi below (SW) Guachochic, 1 (BYU 22674).

The Chihuahua population appears to have fewer granules at midbody than the average given by Duellman and Zweifel (1962) at 103.1. None of the Chihuahua specimens approach 100. Otherwise there are few differences.

The distribution must yet be determined. At present it occurs in both the Río San Miguel and Río Urique basins and undoubtedly is in the lower Oteros basin.

Cnemidophorus exsanguis Lowe

Cnemidophorus exsanguis Lowe, 1956, Bull. Chicago Acad. Sci. 10:137–150.
Colonia Dublán, 3 (BYU 11962–3, 17100).
2 mi N Colonia Juárez (Tinaja Wash), 2 (BYU 13353–4).
Near Red Rock (Tinaja Canyon), 4 (BYU 15458–60, 17044).
3 mi W Colonia Juárez, 10 (BYU 13417–26).
Río Bavispe, below Tres Ríos near Chihuahua-Sonora line, 15 (BYU 13364–66, 13444, 13460, 13462, 13468, 13472, 13474, 13504, 13590–1, 13594, 14558).
Los Chales, 24 mi NE Tres Ríos, 1 (BYU 15826).
18.5 mi E Ricardo Flores Magón, 6 (BYU 13399–400, 13406–9).
5 mi E Colonia Dublán, 6 (BYU 14158–61, 14648, 13476).
Pacheco, 1 (BYU 14146).
60 mi S Sueco near El Sauz, 5 (BYU 14156, 15300, 15307, 15309, 15348).
Call Canyon, near Colonia Juárez, 4 (BYU 41756–9).
Temosachic, 10 (UTEP 2054 [4 specimens], 2058, 2251–4, 2258).
4.1 mi ENE Buenaventura, 1 (UTEP 3571).

Duellman and Zweifel (1962) list the following additional localities: Lake Santa María, 30 mi W Casas Grandes near Cuerba, Río Gavilán, 7 mi SW Pacheco, Ramos, Río Papigochic

near Ciudad Guerrero, 37 mi S 3 mi W Ciudad Juárez, 4 mi S 1 mi E Moctezuma, 20 mi S Gallegos, 7.5 mi S Gallegos, and 10 mi W Namiquipa (19 specimens).

Smith, Williams, and Moll (1963) list 15 specimens from Julimes and 2 mi N of Julimes. These records, and the list above, indicate that the distribution of this species in Chihuahua extends at least south to near Delicias and northwest through the low ranges to the Río Papigochic. We did not collect it in the basin of Chihuahua City where *C. scalaris* was collected.

Those populations in central Chihuahua (west of Highway 45 and east of the mountains) are apparently a southern extension of those in New Mexico. That is, the color pattern and scalation are essentially the same, with six light longitudinal stripes, 67–79 (72.4) scale rows around midbody, and 4–7 scales between the paravertebral light stripes at or near midbody (based on 18 specimens).

A series of 15 specimens from the Río Bavispe are similar in color pattern but variable in scalation. Scale rows around midbody range from 70 to 85 (76.9), and the scales between the paravertebral stripes are 5–7. The largest specimen measured 85 mm in snout-vent length, and several hatchlings collected in late August were 31.5–38.6 mm in snout-vent length.

Cnemidophorus gularis scalaris Cope

Cnemidophorus gularis scalaris Cope, 1892, Trans. Amer. Philos. Soc. 17:47; Maslin and Secoy, 1986, Contributions in Zool., Univ. Colorado Mus. 1:16.
6.4 mi N 1.5 mi W Chihuahua City, 5 (BYU 15375, 16978–9, 17008–9).
48 mi W Chihuahua City (along Highway 16), 1 (BYU 13908).
27 mi S Parral, 4 (BYU 15653–6).
15.4 mi S Villa Matamoros, 4 (BYU 41773–6).
9 mi N El Saúz Junction, 1 (UTEP 1320).
1 mi S Camargo, 1 (UTEP 1321).

Duellman and Zweifel (1962) list 56 specimens from 17 mi N of Chihuahua City and south to near Durango; Smith, Williams, and Moll (1963) list two specimens from La Boquilla. The most northern locality appears to be 9 mi N of El Saúz Junction.

The maximum snout-vent length is 101 mm (BYU 15375), which is larger than that reported by Duellman and Zweifel (1962). Granules around midbody 75–91 (82.5); ventrals, from gular fold to anus, 39–43 (40.5); femoral pores (total) 32–38 (34.4), and 3–9 scales separating the paravertebral stripes. In two hatchlings (BYU 15656 and 41775) the scales between the paravertebral stripes are less variable (6–9 at or near midbody) since the stripes are straight, whereas in adults these stripes become irregular, producing considerable variation in the number of scales between them.

In contrast to the six specimens from Chihuahua City environs reported by Duellman and Zweifel (1962:198), five specimens from just north of the city have 77–90 (83.8) granules at midbody as opposed to their reported 82–92 (86.5). Specimens taken from the same collecting area may vary as much as 10–15 granules and may account for some of the systematic divergence occurring in recent studies dealing with the nomenclature of this and other species of *Cnemidophorus*.

Cnemidophorus inornatus heptagrammus Axtell

Cnemidophorus inornatus heptagrammus Axtell, 1961, Copeia 1961(2):148–158.
2 mi N Gallego, 9 (UTEP 3496–3502, 3512–13).

Axtell described the west central (western Coahuila and eastern Chihuahua) populations as *C. i. heptagrammus*. Wright and Lowe (1965) redescribed *C. i. arizonae* in eastern Arizona, and Williams (1968) described as new the southern populations (Durango and northern Zacatecas) as *C. i. paululus*. The distribution of *C. i. heptagrammus* in Chihuahua is not as yet fully determined. Present records are from an area west from Coahuila to or near Highway 45 and south of Ciudad Juárez along the highway to El Saúz. I have no records for northwestern Chihuahua where *inornatus* may occur either as the subspecies *heptagrammus* or *arizonae*.

Those Chihuahua specimens I have seen have GAB 58–62, ventrals 37–39, femoral pores (total) 32–35, and 7 complete body stripes in all but one, in which the median is only a faint, incomplete stripe for a short distance posterior to the parietal. Other characters are within the parameters set forth in the original description.

Cnemidophorus uniparens Wright & Lowe

Cnemidophorus uniparens Wright and Lowe, 1965, Jour. Arizona Acad. Sci. 3(3):164–68.

6.1 mi (by road) NE Janos, 1 (UTEP 3570).
14.7 mi (by road) SW Ricardo Flores Magón, 1 (UTEP 3572).
19.3 mi (by road) ESE Ricardo Flores Magón, 4 (UTEP 3573–76).
6.2 mi (by road) W El Sueco, 2 (UTEP 3577–8).

It appears that *C. uniparens* may be sympatric with *C. exsanguis* in local areas. The distribution of the species in northern Chihuahua will need a careful study before an understanding of the distribution of the unisexual species of northern Chihuahua is achieved.

Cnemidophorus marmoratus marmoratus Baird & Girard

Cnemidophorus marmoratus Baird and Girard, 1852a, Proc. Acad. Nat. Sci. Philadelphia, p. 128.
Cnemidophorus tigris marmoratus: Burger, 1950, Chicago Acad. Sci. Nat. Hist. Misc. 65:7.
Cnemidophorus marmoratus marmoratus Hendricks and Dixon, 1986, Texas J. Sci. 38(4):327–402.
21.5 mi N Ascensión, 1 (BYU 14508).
30 mi (by road) S Ciudad Juárez, 1 (BYU 15208).
36 mi (by road) S Ciudad Juárez, 3 (BYU 15204–6).
.5 mi S Las Palomas, 2 (UTEP 3410–11).
4.7 mi S Samalayuca, 2 (UTEP 3472–3).
24 mi NNE Ascensión, 1 (UTEP 3567).

Burger (1950) diagnosed *marmoratus* by color pattern and superciliary granules as follows: dorsal color pattern a reticulum of several broken light stripes usually evident middorsally and with vertical bars frequently accentuated on the sides; chin white or graying with black spots; belly white, checkered anteriorly with gray and black. The superciliary granules may extend to the first supraocular (Fig. 8). Zweifel (1959) added the following scale patterns for two series of specimens: granules around body, 26 specimens from Coahuila, 87–110 ($\bar{x}$ = 100.2), and for Alamogordo, New Mexico, 15 specimens, 91–116 ($\bar{x}$ = 102.5). Six specimens from Chihuahua have 88–108 ($\bar{x}$ = 97.8). For the same populations the femoral pores are as follows: 38–48 ($\bar{x}$ = 43.6), 40–48 ($\bar{x}$ = 45.3), and those from Chihuahua 41–46 ($\bar{x}$ = 44.0).

The color pattern in adults is not a clearly defined striped pattern and may exhibit a variation of broken stripes to irregular undulating spots on the body. At or near the nape, and extending from the head, stripes may be discerned for a short distance.

I have made no attempt to define the differences in either the color or scale patterns between the two sympatric species, *C. marmoratus* (and *C. tigris*) and *C. tesselatus*. However, it is obvious that there is a great similarity which perhaps misled Burt (1931), and thus his *C. tesselatus* included a composite. An understanding of this complex was not fully resolved until the distinction of unisexual and bisexual species was established (Zweifel 1965).

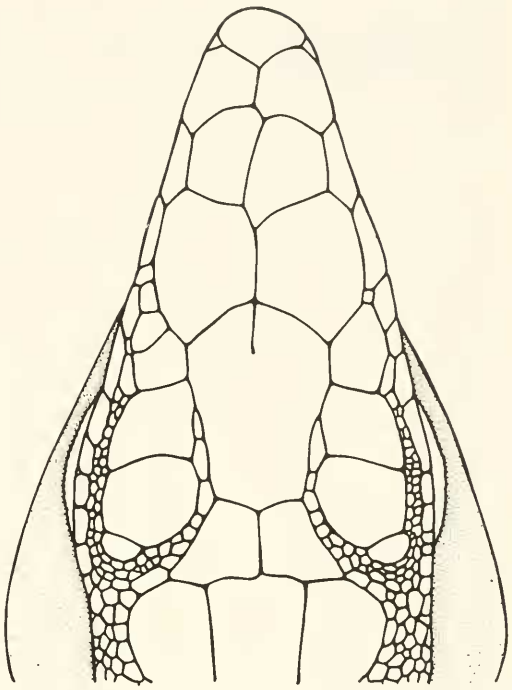

Fig. 8. Dorsal head scales of *Cnemidophorus tigris marmoratus* (BYU 14508) from 21.5 mi N Ascensión, Chihuahua.

Cnemidophorus marmoratus reticuloriens Hendricks & Dixon

Cnemidophorus tigris pulcher Williams, Smith, and Chrapliwy 1960, Trans. Illinois Acad. Sci. 53:43–45.
Cnemidophorus marmoratus reticuloriens Hendricks and Dixon, 1986, Texas J. Sci. 38(4):327–402.
33 mi (by road) S Chihuahua City, 1 (BYU 15812).

The above specimen is included by Hendricks and Dixon (1986) in the series with the subspecies *reticuloriens*, and yet it has a color pattern that approaches *C. m. pulcher*. The throat and chest are heavily pigmented and the venter is a dark brown. The gulars, though sooty brown, do have large dark spots unlike those in more northern *marmoratus*. The dorsal and lateral body pattern is without recog-

nizable stripes and consists of dark to light brown reticulations. A series of dark vertical bars extend from the enlarged ventrals dorsad to the dorsal reticulations, a pattern similar to that of *C. m. marmoratus*.

The scale characters are as follows: dorsals 94, GAB 95, femoral pores 20–21 (41) with 3 scales separating them, enlarged ventrals in 8 rows, ventrals 42 from gular fold to preanals, supralabials 5–5, infralabials 6–6, supraoculars 4–5 with posterior scale on left side divided, circumorbitals only to suture of second supraocular, interparietal single and with two rows of enlarged scales posterior to it, no frenocular, two suboculars with the anterior one enlarged, extending anteriorly and curving dorsad to lie below and in front of the eye, dorsals from occiput to base of tail 202.

The distribution of *C. marmoratus* and its subspecies is not as yet fully understood. This single specimen, although placed in the subspecies *reticuloriens*, does not fit well into the description set forth by Hendricks and Dixon (1986). The color pattern is similar to the subspecies *m. pulcher* in that the gulars have large dark spots occupying at least half the gular area, the venter is mostly dark brown, and the dorsum is without recognizable lines.

This specimen (BYU 15812) appears to be an intergrade between *reticuloriens* and *pulcher*, but with strong indications that it is close to the latter. At least the influence of *m. pulcher* seems to extend north of the type locality in southeastern Chihuahua into the desert areas to the north and perhaps into the Balson Mapimi.

Cnemidophorus tesselatus (Say)

Ameiva tesselata Say, 1823, Long Expedition to Rocky Mountains 2:50.

Cnemidophorus tesselatus: Smith and Burger, 1949, Bull. Chicago Acad. Sci. 8:282; Zweifel, 1965, Amer. Mus. Novitates 2235:1–49.

Smith, Williams, and Moll (1963) reported 62 specimens between Julimes and Alamo along the Río Conchos. Specimens from this area were studied by Zweifel (1965) and related to populations in central New Mexico. Zweifel's illustration in Figure 2-E from Socorro County, New Mexico, is very similar in dorsal (and lateral) color pattern to an adult female specimen of *C. m. marmoratus* taken in northern Chihuahua (BYU 14508). In the latter specimen the stripes are interrupted from near the shoulders posteriorly, and the sides of the body have a series of 12–13 vertical bars between the legs. There are 102 granules at midbody; 41 total femoral pores; circumorbital scales reach anterior to half of the second supraocular, a condition equal to class III in Figure 5, p. 17, of Zweifel (1965). In other scale patterns the mesotychials are enlarged but the postantebrachials are only slightly enlarged; fourth supraocular small, with a small scale preceding the first supraocular; S-V length 94.5 mm.

The demonstration that *C. tesselatus* is a unisexual species served to clarify the systematics of a large group within the genus. The fact that *C. tigris* and *C. tesselatus* have individuals, in some populations, with very similar scale and color patterns may have induced Burt (1931) to include the widely dispersed *tigris* as a synonym of *C. tesselatus*. Except for the small dark spots widely dispersed on the venter of female *C. m. marmoratus* from Chihuahua, little color pattern difference seems to exist between these sympatric species.

The distribution in Chihuahua is not known beyond those specimens reported above.

Family Anguidae

Genus *Barisia*

Barisia levicollis Stejneger

Barisia levicollis Stejneger, 1890, Proc. U.S. Nat. Mus. 13(809):184.

Gerrhonotus imbricatus levicollis Dunn, 1936, Proc. Acad. Nat. Sci. Philadelphia 88:368.

Barisia levicollis: Tihen, 1949, Univ. Kansas Sci. Bull. 33(1):2478.

Barisia imbricatus: Guillette and Smith, 1982, Trans. Kansas Acad. Sci. 85(1):13–32.

Chuhuichupa, 1 (BYU 13898).

16 mi NE San Juanito, 1 (BYU 17023).

We did not find *Barisia* to be numerous. Both specimens were found on hillsides in a shrub habitat, and both were moving when first observed. The Chuhuichupa specimen is a female, 145 mm in snout-vent length, with an incomplete tail.

Both specimens were taken in low shrub, brushy habitat and not on rocky hillsides. This type of habitat is not an easy collecting area and may account for the few specimens taken, not only by us, but by others.

The name usage here follows Tihen (1949) and Smith (1986). For additional records see Guillette and Smith (1982).

Genus *Gerrhonotus*

Gerrhonotus kingii kingii (Gray)

Elgaria kingii Gray, 1838, Ann. Mag. Nat. Hist. 1:390.
Elgaria kingii kingii Tihen, 1948, Trans. Kansas Acad. Sci. 51(3):299–301.
Gerrhonotus kingii kingii Webb, 1970, Cat. Amer. Amph. Rept. 97.1.
Río Bavispe below Tres Ríos, near Chihuahua-Sonora line, 1 (BYU 13442).
3 mi N Chuhuichupa, 2 (BYU 13902, 15473).
4 mi N Chuhuichupa, 1 (BYU 15422).

The color pattern would fit either of the northern subspecies, although some variation is present. The transverse rows of dorsal scales number 54–56. A clear-cut definition appears difficult; therefore, I place them in the subspecies *kingii*, but they may, as indicated by Webb (1970), all come from a zone of intergradation.

Gerrhonotus kingii ferrugineus Webb

Gerrhonotus kingii ferrugineus Webb, 1962, Herpetologica 18(2):73–79.
Near Piedras Verdes, 1 (BYU 22676).

The color pattern is as described by Webb (1970): dark cross bars on body with only one row of scales in each bar with distinct dark and light markings. Dorsal head scales uniform brown; tail with 5 dark bars or spots on dorsals, ventral area of body and tail without any dark markings. Dorsal transverse scale rows between the lateral folds 16 with the scales in the lateral rows only half the size of scales in the other rows; ventral rows 12.

This locality is in the drainage of the Río Urique a short distance northwest of its junction with the Río San Miguel. Collecting localities cited by Webb (1970) are north of the Barranca del Cobre some distance from Piedras Verdes. The latter locality is only a short distance from the Chihuahua-Sinaloa line and may represent the most northern limits of *G. k. ferrugineus*. It was taken at an elevation of approximately 6,000 feet.

Gerrhonotus liocephalus taylori Tihen

Gerrhonotus liocephalus taylori Tihen, 1954, Amer. Mus. Novitates Bull. 1687:1–26.
Clarines Mine, 5 mi W Santa Bárbara, 1 (AMNH 67918).
Santa Bárbara, 1 (AMNH 68235).

These specimens collected by G. M. Bradt in 1947 are, to my knowledge, the only ones known from Chihuahua. I have not seen them and can only suggest that the uplands of southern Chihuahua may yet provide new taxa and distribution records when its herpetofauna is fully known.

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Many individuals and families assisted in the field work conducted in various parts of Chihuahua. We were accepted not only by the American colonists but also by the Mexican and Indian individuals with whom we came in close contact upon several occasions.

In Colonia Juárez we were fortunate in having an opportunity to stay at the homes of Mr. and Mrs. David Johnson, Jr., and Mr. and Mrs. Irvin Romney. The Turleys were also very helpful. Perhaps those most understanding of our aims in the gathering of material were the Hatch brothers, Herman, Roy, and Seville. We were particularly grateful to the Herman Hatch family, who not only permitted us to bed down under the old apple tree at any hour of the day or night, but who also offered us their hospitality and served as information agents for our travels in much of northern and central Chihuahua (Fig. 2).

Our first trip into the mountains was with the Colonia Juárez scout troop to the Río Bavispe (just below Tres Ríos), and the next year with Amilio Borgous to Chuhuichupa. These trips introduced us to the mountains and prepared us, we thought, for the barrancas of southwestern Chihuahua.

In Colonia Dublán, Mr. Alma Jarvis, the postmaster, provided us with valuable information concerning areas for which he was well informed. Mr. and Mrs. Keith Bowman, upon a number of occasions, provided us with meals and a place to stay.

In Ciudad Chihuahua we were fortunate in becoming acquainted with Mr. Harold Pratt, the Chihuahua agent for the Alice-Chalmers Equipment Company. Mr. and Mrs. Pratt opened their home to us, and provided an opportunity for us to rest after having been in the mountains for a time, and also an opportunity to curate and reassemble our collections in preparation for the trip home. It was from their estate that we were able to spend collecting time in the Ciudad Chihuahua area. We were also fortunate to have met a friend, Mr. Ray Thane, in San Francisco del Oro, who provided us with information and an opportu-

nity to visit with a Mexican family.

During the years spent in Mexico I had the good fortune of having as companions a number of capable faculty and graduate students. The first trip (1956) involved Mr. Verle Allman, a biology teacher, and my son Lynn. For the next four years I had as my companion Dr. Gerald W. Robison, now at the Bethesda, Maryland, research center. We were accompanied, upon one occasion (1958), by Dr. and Mrs. Irving W. Knobloch, professor of botany from Michigan State University, and upon another occasion by Dr. Stephen L. Wood, an entomologist from Brigham Young University and his graduate student, Dr. Jay Karren.

The trip to Urique with Dr. Knobloch was a highlight, as was the trip with Dr. Wood to Maguarichic. Each trip added to our species list and seemed to compel us to plan the next trip. In October of 1963 I was a member of the John Cross expedition into the Barranca del Cobre. Although we could not run the river as planned, we did get considerable publicity in both the Chihuahua and U.S. newspapers and had the opportunity to secure additional material and data. Mr. John Cross is an accomplished adventurer and river runner, having been interested in commercial river expeditions during much of his life. His interest in the rivers of southwestern Chihuahua was thus not only a part of his vocation but also an adventure for him into a new river system. Mr. Cross made at least three additional trips into the barrancas of southwest Chihuahua, two down the Río Urique and one from the Río Verde, south of Guachochic, into the Río San Miguel and to the junction of the Río Urique. Although herpetology was not their prime interest, a number of new records for Chihuahua were obtained and the specimens deposited in the BYU collection.

During the next few years I had as my companions either Dr. Glen T. Moore, a botany professor at BYU, or Dr. Kenneth R. Larson, a graduate student at the time.

Upon occasion we solicited the aid of local citizens, particularly when we were shorthanded in the mountain areas. Everyone was helpful and cooperative. This occurred, for example, when we were at Creel. The La Bufa mining superintendent helped us secure the necessary supplies and travel information to complete our trip into the southwestern barranca area.

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